DRAFT

TECHNICAL MEMORANDUM 1
MONITORING WELL INSTALLATION AND DEVELOPMENT AND SOIL SAMPLING

SUMMARY
SITE INVESTIGATION AND REMEDIATION REPORT
AIRPORT/KLONDIKE AREA
AT
PRATT & WHITNEY
EAST HARTFORD, CONNECTICUT
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Table of Contents

	Page
1. INTRODUCTION	**1-1**
1.1 Purpose and Objective	1-1
1.2 Background	1-1
1.3 Scope	1-2
1.4 General Geologic and Hydrogeologic Conditions	1-3
1.5 Well Locations and Rationale	1-3
2. METHODOLOGY	**2-1**
2.1 General Procedures	2-1
2.2 Drilling Methods	2-1
2.3 Soil Sampling Methods	2-2
2.4 Borehole Logging	2-3
2.5 Installation of Monitoring Wells	2-3
2.5.1 Installation of Standard Monitoring Wells	2-3
2.5.2 Installation of Geoprobe® Prepack Monitoring Wells	2-5
2.5.3 Installation of Screenpoint Samples	2-6
2.6 Historical Monitoring Wells	2-7
2.7 Monitoring Well Development	2-8
2.8 Soil Physical Properties Testing	2-9
2.9 Decontamination of Materials and Equipment	2-9
2.10 Monitoring Well Location Identifiers	2-10
2.11 Waste Management	2-11
2.12 Health and Safety	2-11
3. RESULTS	**3-1**

TABLES

Table 1	Monitoring Well Locations and Rationale
Table 2	Monitoring Well Construction Data Summary
Table 3	Soil Physical Properties Data Summary
Table 4	Area and Sampling Type Identifiers

DRAWINGS

Drawing 1	Monitoring Well Location Map
Drawing 2	Groundwater Sampling Locations, Northwest Portion - Airport/Klondike Area
Drawing 3	Groundwater Sampling Locations, Northeast Portion - Airport/Klondike Area
Drawing 4	Groundwater Sampling Locations, Southwest Portion - Airport/Klondike Area
Drawing 5	Groundwater Sampling Locations, Southeast Portion - Airport/Klondike Area

ATTACHMENTS

Attachment A	Monitoring Well Construction Logs

Acronyms

AEL	Averill Environmental Laboratory, Inc.
DEP	State of Connecticut Department of Environmental Protection
DPH	State of Connecticut Department of Public Health
FID	Flame-Ionization Detector
H&A	Haley & Aldrich, Inc.
LEA	Loureiro Engineering Associates, Inc.
M&E	Metcalf & Eddy, Inc.
NTU	Nephelometric Turbidity Unit
P&W	Pratt & Whitney
PETG	Polyethylene Teraphthalate Copolyester
PID	Photo-Ionization Detector
PPE	Personal Protective Equipment
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
QUANT	Quanterra Environmental Services, Inc.
RCSA	Regulations of Connecticut State Agencies
SOP	Standard Operating Procedure
TM	Technical Memoranda
USTM	Unit-Specific Technical Memorandum
VOC	Volatile Organic Compound

1. INTRODUCTION

1.1 Purpose and Objective

This Technical Memorandum (TM) presents the methodology and results of the monitoring well installation and development and the soil sampling methodology used in the Airport/Klondike Area of the Pratt & Whitney (P&W) facility located at 400 Main Street (Main Street facility) in the Town of East Hartford, Connecticut. Monitoring wells were installed and developed by Loureiro Engineering Associates, Inc. (LEA) as part of the Site investigation activities to augment the existing monitoring well network. The new monitoring well locations were chosen to provide additional information on subsurface hydrogeologic conditions.

Additionally, this TM describes the methodology used for the installation of Geoprobe® screenpoint groundwater samples. Screenpoint samples were used in place of permanent or temporary monitoring wells to provide a "snapshot" of the groundwater quality.

Obtaining additional information on the subsurface hydrogeologic conditions included the following objectives:

- Explore the lithology and hydraulic characteristics of the overburden materials across the Site.
- Better define the groundwater levels to establish both the horizontal gradients and groundwater flow directions and the degree of groundwater/surface water interaction.
- Better define areas of contaminated groundwater.

1.2 Background

The Airport/Klondike Area is located on the eastern portion of the P&W Main Street facility on the east side of the main plant, north of Brewer Street and south of Silver Lane. The Airport/Klondike Area consists of four study areas that include the North and South Airport Areas and the North and South Klondike Areas. Previous investigations at the Site performed from 1990 through 1993 resulted in the installation and sampling of groundwater monitoring wells and temporary wellpoints throughout the Airport/Klondike Area.

In the North Airport Area, wells NA-MW-01 through NA-MW-04 were installed in October

1991 during the Site-Wide Environmental Monitoring Program at the Main Street facility by Haley & Aldrich, Inc. (H&A). In the North Airport Area, piezometers NA-PZ-01 through NA-PZ-12 were installed in November 1991 during the Site-Wide Environmental Monitoring Program.

In the North Klondike Area, wells NK-MW-01 through NK-MW-05 were installed in February 1990 during the Preliminary Reconnaissance Survey of the Airport/Klondike Area by Westinghouse Environmental and Geotechnical Services, Inc. (Westinghouse). Wells NK-MW-06 and NK-MW-07 were installed in October 1991 during the Site-Wide Environmental Monitoring Program. Wells NK-MW-08 through NK-MW-10 were installed in October 1992 during the Environmental Assessment of the Former PCB Storage Building by H&A. Wells NK-MW-12 through NK-MW-17 were installed in about April 1993 during the Klondike Area Site Investigation by Metcalf & Eddy, Inc. (M&E). Two additional monitoring wells, NK-MW-18 and NK-MW-19, were installed in July 1996 by LEA as part of the most recent investigation activities.

In the South Klondike Area, wells SK-MW-01 through SK-MW-08S and SK-MW-8D were installed in February 1990 during the Preliminary Reconnaissance Survey. Wells SK-MW-09 through SK-MW-13 were installed in October 1991 during the Site-Wide Environmental Monitoring Program. Wells SK-MW-14I, SK-MW-15I, and SK-MW-16 were installed in about April 1993 during the Klondike Area Site Investigation. Six additional monitoring wells, SK-MW-18 through SK-MW-24, were installed in August 1996 by LEA as part of the most recent investigation activities.

In the South Airport Area, monitoring wells SA-MW-01 and SA-MW-02I were installed in February 1990 during the Preliminary Reconnaissance Survey. Wells SA-MW-03 through SA-MW-05S and SA-MW-05I were installed in October 1991 during the Site-Wide Environmental Monitoring Program. In the South Airport Area, piezometers SA-PZ-01 and SA-PZ-02 were installed in November 1991 during the Site-Wide Environmental Monitoring Program.

1.3 Scope

This TM covers the methodologies and rationale used for the installation of monitoring wells, Geoprobe® prepack monitoring wells, piezometers, and stream gauges at the Site during the period from 1993 to the present. This TM also covers the methods employed to sample soil during monitoring well installation. However, this TM does not cover soil sampling methodologies not associated with monitoring well installation but conducted during the

installation of soil borings as part of the contaminant delineation activities at the Site. In addition, this TM also does not cover specific chemical analyses of soil samples collected during the monitoring well installation as these data are discussed in the appropriate Unit-Specific Technical Memorandum (USTM), or the chemical analyses of groundwater samples collected from these monitoring wells as these are discussed in TM 3, *Groundwater Quality and Sampling*.

1.4 General Geologic and Hydrogeologic Conditions

The geologic and hydrogeologic characteristics of the Site are discussed in detail in the main body of this report. In general, the surficial materials, in which the majority of the monitoring wells are screened, consist of medium to fine grained sands with trace levels of fine gravels and coarse sands. These sediments are generally post-glacial, fluvial deposits associated with the Connecticut River, although in many places the upper portion of these sediments has been anthropogenically disturbed during on-site construction activities. Beneath the fluvial sediments are glaciolacustrine sediments, primarily laminated silts and clays, associated with glacial Lake Hitchcock. The basal sediment layer over most of the area is glacial till and stratified drift. Bedrock in the general East Hartford area consists of Triassic Age, interbedded arkoses and basalts. Bedrock in the area has a general slight dip eastward cut by widespread steep faults.

The regional drainage basin is the Upper Connecticut River Basin. Regional flow in the unconsolidated materials of this part of the basin is to the west, towards the Connecticut River. Local groundwater flow is also controlled to some extent by local drainage sub-basins and topography. The upper portion of the unconsolidated sediments serves as the primary aquifer in the area. Groundwater flow in the bedrock is primarily within fractures and fault planes, and to a lesser extent within the rock matrix. The local bedrock aquifer would be adequate as a residential water supply source, but groundwater yields are typically too low to be of commercial or industrial use.

1.5 Well Locations and Rationale

Monitoring wells have been installed at the Site over the course of several years as parts of a variety of environmental investigations. Monitoring wells and piezometers have been installed to provide overall groundwater flow patterns, overall groundwater quality, water-table elevation data for Rentschler Airport drainage, and area-specific groundwater quality information. In general, monitoring wells and piezometers installed by LEA have been designed to address specific groundwater quality issues in areas of known or suspected groundwater contamination, or to provide additional background groundwater quality and water-table elevation data.

In many cases, these monitoring wells were located on the basis of historical information regarding Site operations, or on the basis of field observations made during numerous Site walkovers and visits. Information on historical operations has been obtained from various reports, aerial photographs, engineering drawings and plans, and P&W internal memoranda. More detail on historical operations is included in the main body of this report as well as in the USTMs.

Based on information collected from existing monitoring wells, monitoring wells and piezometers installed during this Site investigation have been screened in the upper portion of the unconsolidated aquifer. Monitoring wells and piezometers have been installed to address specific potential contaminant release issues and to supplement the existing monitoring well network. In some cases, the location of a monitoring well has been chosen on the basis of groundwater quality information collected from Geoprobe® screenpoint groundwater samples. In other cases, monitoring wells have been located on the basis of soil quality data derived from the soil boring program. A summary for the location rationale for the monitoring wells and piezometers is presented in Table 1.

2. METHODOLOGY

This section presents the methods and techniques used to install the monitoring wells and piezometers at the Site. These methods were used by LEA, although some of the general procedures and methods were also used by previous consultants and contractors who installed the existing monitoring wells.

2.1 General Procedures

Monitoring wells in the Airport/Klondike Area have been installed by conventional hollow-stem auger drilling rigs and by direct-push techniques using the LEA Geoprobe® drilling rig. Monitoring wells have been installed at the Site since approximately 1980. This TM discusses the installation methods and soil sampling procedures used to install the monitoring wells emplaced at the Site since approximately 1990. Where possible, reference is made to techniques and methodologies used to install existing monitoring wells by previous consultants and contractors. However, this information has been taken from available literature and does not constitute first-hand knowledge of the installation procedures or sampling methodologies. In addition, some information regarding monitoring well construction and/or soil sampling was not reported.

Wells installed during the most recent investigation activities were installed in general accordance with the procedures described in the LEA Standard Operating Procedure (SOP) *Standard Operating Procedure for Hollow Stem Auger Borings* and the LEA SOP for *Standard Operating Procedure for Monitoring Well Installation.*

2.2 Drilling Methods

Two drilling methods were used to install monitoring wells, both historical monitoring wells and those installed as part of the most recent investigation activities, in the Airport/Klondike Area. The methods used were hollow-stem augering and Geoprobe® direct-push techniques. Each of these methods is briefly described below.

The hollow-stem auger drilling method used continuous-flight hollow stem augers for monitoring well installation. The typical auger used had an inside diameter of 4.25 inches and a length of 5 feet. A pilot assembly, consisting of a surface-retractable plug for the lead-auger head, was used to avoid filling the augers with formation material. Continuous sampling with a split-spoon sampler was performed in advance of the augers. The split-spoon sampler consisted

of a 24-inch long by 1.375-inch inside diameter steel sampling tube. The split-spoon sampler was driven through the 2-foot sampling interval with a 140-pound hammer with a 30-inch drop. After the split-spoon sampler was retrieved, the sampler was transferred to the attending geologist for sampling and logging. Drilling fluids were not required during the installation of soil borings using hollow-stem augers.

The direct-push techniques with the LEA Geoprobe® 5400 were used to install soil borings and both temporary and permanent monitoring wells. Direct-push techniques involved the initial installation of a soil boring to depth using Geoprobe® soil sampling techniques. Boreholes were advanced using the Geoprobe® Macro-Core® soil sampling equipment. Upon completion of the soil boring, an installation casing, sealed at the tip with an expendable stainless-steel point, was advanced to depth. The expendable stainless-steel point was used to avoid filling the casing with formation material.

The Macro-Core® system consisted of a 48-inch long by 2-inch outside diameter steel sampling tube outfitted with disposable 46-inch long by 1.75-inch diameter polyethylene teraphthalate copolyester (PETG) liners. The soil sampler was outfitted with a new liner and a fitted piston tip, and the entire unit was driven to the top of the sampling interval with the Geoprobe® rig. The purpose of the fitted piston tip was to seal the end of the sampling tube against the introduction of formation material during advancement. The piston tip was released by the operator, the sampler was driven to the final sampling depth by a combination of percussive hammering and direct pressure, and the sampler was retrieved. After the sampler was retrieved, the soil-filled liner was removed from the sampler and transferred to the attending geologist for sampling and logging.

2.3 Soil Sampling Methods

Soil samples collected from soil borings were sampled in general accordance with the procedures described in the LEA SOP *Standard Operating Procedure for Soil Sampling*. Continuous soil sampling was performed during the advancement of all boreholes. Soil sampling procedures were similar for split-spoon samples and for Geoprobe® Macro-Core® samples

Immediately after collection, all soil samples were examined by the attending geologist for indications of contamination, such as the presence of visible free-phase petroleum, visible staining, or the incidental presence of odors. Soil samples were collected directly into laboratory supplied glass sample containers with Teflon®-lined lids for submission to an off-site laboratory for possible analysis. In addition, a 5-gram aliquot of the soil was collected directly into a 40-

milliliter vial with a Teflon® septum for submittal to the LEA Analytical Laboratory for analysis for target VOCs. After sample collection, all soil samples were field headspace screened with either a photoionization detector (PID) or flame ionization detector (FID) for the presence of volatile organic compounds (VOCs).

2.4 Borehole Logging

After the retrieved soil was sampled for possible analysis at an off-site laboratory and field headspace screening, the attending geologist also described the soils using a modified Burmister Classification System. The geologic descriptions were recorded on standardized "Geologic Boring Log" forms in accordance with the LEA SOP *Standard Operating Procedure for Geologic Logging of Unconsolidated Sedimentary Materials*. The general data recorded for the subsurface materials encountered included the estimated grain size ranges according to the Burmister Classification Scheme, color, relative degree of water saturation, and visible sedimentary structures.

2.5 Installation of Monitoring Wells

Following completion of each borehole to the desired depth, monitoring wells were installed in general accordance with the LEA SOP *Standard Operating Procedure for Monitoring Well Installation*. The screened interval for the monitoring well was specified by the geologist based on the observed depth to water, the materials encountered, and the presumed water-table fluctuations to be expected.

During monitoring well installations, additional information regarding the monitoring well construction details was recorded on standardized "Monitoring Well Construction" log forms in accordance with the LEA SOP *Standard Operating Procedure for Monitoring Well Installation*. The general information recorded included the types and construction of the well materials, the screened interval, the dimensions and materials of the filter pack, the backfill materials, and the surface completion of the monitoring well.

2.5.1 Installation of Standard Monitoring Wells

For monitoring wells installed with conventional hollow-stem auger drill rigs, 2-inch diameter polyvinyl chloride (PVC) well materials were selected based on the need to allow groundwater sampling and minimize the volume of waste soil and purge water generated.

The 2-inch PVC well material was installed in the borehole to the specified depth interval. All PVC well materials were pre-cleaned by the manufacturer and kept in the sealed packaging prior to installation in the borehole. From bottom to top, the well materials consisted of a 2-inch diameter PVC end cap, a 5- or 10-foot length of 0.010-inch (No. 10 slot) mill-slotted PVC screen, and an appropriate length of 2-inch diameter PVC blank casing (riser). The well materials were joined by factory-threaded ends. Total well screen lengths were kept to 10 feet or less to allow sampling of discrete intervals while allowing a sufficient length of open screen for water-table fluctuations.

After the well materials were in place, a filter sand pack was installed from the bottom of the screened interval to a depth of at least 6 inches above the screened interval. The shallow thickness of filter pack above the screened interval was necessary in some cases due to the shallow depth to water and the need to provide a sufficient length of screen above the existing water table to allow for natural water-table fluctuations throughout the year while also leaving space for completion of the necessary components for well construction. The filter pack material was typically chosen based on previous field experience at the Site. The filter pack material typically consisted of Morie No. 00, No. 0, or No.1 sand, or the equivalent.

Above the filter pack, a bentonite chip or pellet seal was placed to prevent surface contamination from entering the well screen. The thickness of the annular seal ranged from approximately 6 inches to 2 feet depending on the available annular space. The bentonite seal was hydrated with potable or distilled water when placed above the water table. Typically, the annular seal was made sufficiently thick so that the top of the annular seal was coincident with the base of the concrete pad.

Monitoring wells were completed with either above-grade or at-grade wellhead completions, depending upon the anticipated level of traffic in the vicinity of the well. The concrete pads on all monitoring wells were originally intended to be 3 foot by 3 foot by 3 foot. However, due to the shallow depth to groundwater in some areas of the Site, some concrete pads were as thin as 2 feet. Above-grade wellhead completions consisted of protective steel casings with locking caps. The protective casings were approximately 5 feet long with the base of the protector placed approximately at the bottom of the concrete pads. The top of the protective casing was approximately 0.2 to 0.4 feet above the top of the PVC riser. At-grade wellhead completions consisted of a steel protective roadbox and a locking plug for the monitoring well PVC riser. The concrete pads were constructed so as to slope away from the monitoring well to allow precipitation to drain away from the protector and not pond at the well. A survey reference point was installed at all monitoring well locations installed by conventional drilling rigs.

2.5.2 Installation of Geoprobe® Prepack Monitoring Wells

Direct-push techniques with the LEA Geoprobe® 5400 were used to install both temporary and permanent monitoring wells. Direct-push techniques for permanent monitoring well installations involved the initial installation of a soil boring to depth using Geoprobe® soil sampling techniques. Boreholes were advanced using the Geoprobe® Macro-Core® soil sampling equipment. Upon completion of the soil boring, an installation casing, sealed at the tip with an expendable stainless-steel point, was advanced to depth. The expendable stainless-steel drive point was used to avoid filling the casing with formation material.

The installation casing was a 2.125-inch outside diameter threaded steel casing with an expendable drive point at the downhole end. The expendable drive point was held in-place during casing advancement by an O-ring. The O-ring also maintained the watertight integrity of the casing during advancement to depth. The monitoring well was installed within the installation casing.

The base of the screened section of the Geoprobe® monitoring well was fitted with a coupling which attached to the expendable drive point and anchored the screen and riser into place. The prepack screened sections were composed of interlocking, 3-foot long, 0.5-inch diameter, 0.010-inch slotted Schedule 80 PVC surrounded by a 1.5-inch diameter stainless steel mesh which held the filter pack sand in place. The filter pack consisted of a 20/40 grade silica sand.

The prepack screens were placed into the installation casing and an appropriate length of 0.5-inch diameter Schedule 80 PVC riser was attached. After lowering the well sections to the base of the casing, the well was attached to the expendable drive point by driving the well down sharply. After the well was attached to the drive point, the installation casing was withdrawn from the borehole while an approximately 2-foot thick sand cap was placed above the screen. The purpose of the sand cap was to isolate the screened interval from the bentonite seal and prevent bentonite from infiltrating into the screen. A bentonite seal was placed above the sand cap. This seal was typically brought to the surface in the Airport/Klondike Area due to the relatively shallow depth to the water-table. The monitoring wells were completed with either above-grade or at-grade wellhead completions similar to those described above for standard monitoring wells.

Temporary monitoring wells were used in instances where a groundwater sample was required and where a water-table elevation measurement may also have been desired. Temporary monitoring wells were not completed with roadboxes, filter packs, or bentonite seals, but were

typically constructed of 1-inch diameter Schedule 80 PVC screen and riser installed directly in the open borehole and sampled immediately.

In some instances, a small amount of filter pack sand was added to stabilize the borehole, but a bentonite seal was not typically used because of the possible difficulty in removing the temporary well. Temporary wells were not left in place for extended periods of time. These temporary wells were installed only for as long as necessary to collect a groundwater sample, to survey the elevation, or to collect water-table elevation data. Temporary monitoring wells were removed and the boreholes abandoned by filling with bentonite.

2.5.3 Installation of Screenpoint Samples

Screenpoint groundwater samples were collected using a Geoprobe® Screen Point Sampler® prior to approximately February 1997 and a Geoprobe® SP-15 Screen-Point Sampler® since approximately February 1997. Screenpoint sampling devices were typically employed in "unsampled" boreholes within 6 to 12 inches of "sampled" boreholes. In this manner, the groundwater samples collected from the screenpoint sampling devices represent undisturbed groundwater from the same interval as the corresponding soil samples from the immediately adjacent soil borings.

The Screen Point Sampler® consisted of a 22-inch long, stainless-steel wire mesh insert and sleeve that was driven to depth in a protective sheath with an expendable drive point. The wire mesh insert and sleeve were held in place in the protective sheath by the expendable drive point which in turn was held in place by inert O-ring seals and the pressure of being pushed through the formation. After the screen was driven to depth, the drill rods were retracted approximately 24 inches, and the expendable drive point remained in place, creating a void in the formation. The Screen Point Sampler® was manually extended into the void while the sheath and drill rods sealed the borehole above the sampler. After the sampler had been emplaced, a groundwater sample was collected using standard sampling techniques. Groundwater sampling methodologies and results are discussed in TM 3, *Groundwater Quality and Sampling*.

The SP-15 Screen Point Sampler® consisted of an approximately 42-inch long, stainless steel, wire-wound screen and metal sheath provided with an expendable drive point. After the screen was driven to depth, the drill rods were retracted approximately 44 inches, and the expendable drive point remained in place, creating a void in the formation. The SP-15 screen was manually extended into the void while the sheath and drill rods sealed the borehole above the sampler. After the sampler has been emplaced, a groundwater sample was collected using standard

techniques. Groundwater sampling methodologies and results are discussed in TM 3, *Groundwater Quality and Sampling.*

After the collection of groundwater samples from either a Screen-Point Sampler® or an SP-15 Screen-Point Sampler® , the screens, sheaths, and drill rods were removed, and the expendable drive points remained in place as the borehole was abandoned.

2.6 Historical Monitoring Wells

Monitoring wells have been installed at the Site since approximately 1990. These monitoring wells have included monitoring wells with shallow, intermediate, and deep screened intervals. Shallow monitoring wells were constructed such that the screened interval was placed across the water-table. Intermediate depth monitoring wells were constructed such that the screened interval was typically at the base of the upper aquifer, below the water table. In several cases, the monitoring wells indicated as intermediate were constructed with screened intervals immediately below the water table.

The first sixteen monitoring wells at the Site appear to have been installed in 1990 under the supervision of Westinghouse during the Preliminary Reconnaissance Survey of the Airport/Klondike Area. Fifteen shallow/intermediate depth overburden monitoring wells, NK-MW-01I, NK-MW-02I, NK-MW-03I, NK-MW-04I, NK-MW-05S, SA-MW-01I, SA-MW-02I, SK-MW-01I, SK-MW-02I, SK-MW-03I, SK-MW-04I, SK-MW-05S, SK-MW-06I, SK-MW-07I, and, SK-MW-08S, installed during this survey were reported to have been installed using hollow-stem auger boring techniques. One deep monitoring well, SK-MW-08D, was installed using drive-and-wash techniques to avoid the possibility of cross-contaminating the deeper portion of the upper aquifer.

During the installation of these historical monitoring wells, split-spoon samples were collected every five feet and selectively screened for the presence of VOCs. Geologic boring logs including the available monitoring well construction details are presented in Attachment A. The monitoring well construction details are also summarized in Table 2.

In 1992, fifteen additional monitoring wells were installed in the Airport/Klondike Area under the supervision of H&A as part of a Site-Wide Environmental Monitoring Program. The fifteen shallow/intermediate depth overburden monitoring wells, NA-MW-01, NA-MW-02I, NA-MW-03, NA-MW-04I, NK-MW-06, NK-MW-07, SA-MW-03, SA-MW-04, SA-MW-05S, SA-MW-05I, SK-MW-09, SK-MW-10, SK-MW-11, SK-MW-12, and SK-MW-13, were advanced using

hollow-stem augers. Copies of all available geologic boring logs are included in Attachment A. Available construction details for these monitoring wells are summarized in Table 2.

In addition to the fifteen monitoring wells described above, fourteen piezometers were also installed. These piezometers, NA-PZ-01 through NA-PZ-12, SA-PZ-01, and SA-PZ-02, were installed in areas where groundwater quality monitoring was not anticipated to be required, but where groundwater elevation data could not otherwise be obtained. These piezometers were generally installed in the same manner as the monitoring wells, however, no soil sampling was performed during the installations. No geologic boring logs were recorded for these piezometers. Available construction details for these piezometers are summarized in Table 2.

2.7 Monitoring Well Development

Monitoring wells were developed in accordance with the procedures outlined in the LEA SOP *Standard Operating Procedure for Monitoring Well Installation.* Development waters were originally placed into portable containers until they were placed into 55-gallon drums as described in Section 2.11.

Monitoring wells were developed by alternately over-pumping, using a submersible pump to draw down the water level in the well, and surging to flush fine sediment from the aquifer through the screen to be subsequently removed. After the well was initially pumped, the well was then surged using a surge block or inertial pump. With the surge block or inertial pump, the well was surged beginning at the bottom of the screened interval and working upward to the top of the screen. After surging, the well was pumped to remove suspended sediments. This cycle was repeated until the well development criteria had been met.

Monitoring wells were developed until the following criteria were met:

- Removal of at least three well volumes.
- Stability of the physical parameters of temperature and specific conductance. Values for these parameters must be within ten percent over three sequential water samples with a minimum of one well volume extracted between samples.
- Turbidity must be less than approximately twenty Nephelometric turbidity units (NTU) at completion, and the water must be clear.
- The pH must be lower than 9.0 and stable within 0.1 pH unit.

2.8 Soil Physical Properties Testing

Soil physical properties testing was not typically performed on soil samples collected during monitoring well installations. Soil physical properties testing is often performed during monitoring well installations to provide information on the grain size distribution of the aquifer so that a suitable filter pack material may be selected. However, soil physical properties testing was performed in 1992 as part of the Site-Wide Environmental Monitoring Program performed by H&A, Inc. Matrix porosity testing and grain size analyses were performed on selected soil samples collected from across the site.

In general, the results of the grain size distribution analysis indicate that the upper aquifer materials at the Site are a brown to red brown, medium to fine sand, with traces of fine gravel and coarse sand. The results of the matrix porosity testing are also relatively uniform indicating typical matrix porosity values of between 36.6 and 43.3 percent for the upper aquifer sediments at the Airport/Klondike Area (H&A, 1993). A summary of the available soil physical property data is presented in Table 3.

2.9 Decontamination of Materials and Equipment

The purpose of consistent decontamination procedures was to prevent the potential spread of contamination between boreholes and samples and from the immediate work area around the well borehole. All equipment and materials placed into a borehole, or associated with the collection and sampling of soil from a borehole, was decontaminated prior to initiating the drilling activities and between individual samples, as appropriate. Decontamination procedures are presented in the LEA SOP *Standard Operating Procedure for Hollow Stem Auger Soil Borings*.

Drilling rigs and downhole equipment (e.g., hollow-stem augers, bits, etc.) were decontaminated by steam-cleaning prior to initiating any drilling activities at the Site. Steam-cleaning took place at a decontamination pad. The decontamination pad was typically a portable plastic or metal basin of sufficient volume to hold augers and other drilling equipment and which could be laid beneath the back end of the drilling rigs to contain the spent decontamination fluids.

Sampling equipment such as split-spoons and stainless steel spatulas were decontaminated between uses in the field at the drilling site or the decontamination pad. The sampling equipment was decontaminated using the following procedure:

- Brush off gross soil particles.

- Wash and scrub equipment with phosphate-free detergent.
- Rinse equipment with deionized water.
- Rinse equipment with dilute nitric acid solution.
- Rinse equipment in deionized water.
- Rinse equipment with dilute methanol/water solution.
- Rinse equipment in deionized water.
- Allow equipment to air dry.

The decontamination water was maintained in 5-gallon buckets during use and transferred to 55-gallon drums for disposal. LEA field personnel were responsible for preventing cross-contamination between soil samples collected for laboratory analysis. Sample preparation tables were covered with clean, disposable plastic. Clean, disposable plastic was also laid on the ground beneath the sample preparation tables and the decontamination solutions to catch dropped soil and spilt decontamination solutions.

2.10 Monitoring Well Location Identifiers

Monitoring wells, as well as piezometers, stream gauges, surface water and sediment sampling locations, and soil borings, have been provided with location identifiers using a systematic method to prevent duplication of location identifiers. The system of location identifiers provides a relatively easy means of finding the referenced locations on site maps. All parts of the P&W East Hartford facilities, including the Andrew Willgoos Gas Turbine Laboratory, the Colt Street facility, and Main Street facility, have been divided into twenty-nine study areas. Each of the study areas has been assigned two-letter identifiers based upon the common name for the area. These two-letter designations are presented in Table 4.

In addition, each type of sampling location has been assigned a two-letter designation to identify the major sample type for a given sampling location. The two-letter designations for the various types of sampling locations are also presented in Table 4.

Because of the large areas involved, the study areas that encompass the Airport/Klondike Area include the North and South Airport Areas and the North and South Klondike Areas. All monitoring and sampling locations have been given a location identifier based on their location in the Airport/Klondike Area, the type of sampling or monitoring location, and finally a sequential numeric identifier based upon the specific type of location. The monitoring well locations are shown on Drawing 1. All of the groundwater sampling locations, including

monitoring wells, piezometers, and Geoprobe® screenpoint samples, are presented on Drawings 2 through 5 which cover the entire Airport/Klondike Area.

2.11 Waste Management

All spent decontamination fluids generated during drilling activities and purge water generated during monitoring well development activities for the investigation were placed in 55-gallon closed-top drums supplied by P&W for subsequent off-site disposal by P&W. The drums were labeled, the wells contributing to each was listed, and the information tracked to aid in waste characterization and disposal.

All soil cuttings generated during drilling activities were placed in 55-gallon open-top drums supplied by P&W for subsequent off-site disposal by P&W. The drums were labeled, the wells contributing to each was listed, and the information tracked to aid in waste characterization and disposal.

2.12 Health and Safety

LEA field personnel conducted field activities in accordance with the LEA Site Health and Safety Plan that was prepared for all of the investigation activities included on the Site. In general, well installation was conducted in modified Level D personal protective equipment (PPE) consisting of safety glasses and surgical or nitrile gloves, steel-toed shoes, and hard hats. Drilling contractors employed as subcontractors operated in accordance with their specific health and safety plans.

3. RESULTS

A total of fifty-six monitoring wells and fourteen piezometers have been installed at the Site since approximately 1980. These monitoring wells and piezometers have been installed during various environmental investigations and for various purposes. In some cases, as a substitute for permanent monitoring wells or piezometers, Geoprobe® screenpoint groundwater samples were collected.

Monitoring wells and piezometers were installed in general accordance with the procedures and practices described in the LEA SOP *Standard Operating Procedure for Monitoring Well Installation.* Changes in specific conditions, such as the depth to the water table, necessitated modifications to certain monitoring well installations and designs.

In general, fine sand packs have been deemed unnecessary due to the grain-size of the filter pack and the typically shallow depth to water. In several monitoring wells the height of the filter pack was modified from the original design due to the shallow depth to water and the need to install a sufficient bentonite seal and accommodate the construction of an adequate concrete pad.

REFERENCES

Haley & Aldrich, Inc., January, 1993, *Site-Wide Environmental Monitoring Report, Pratt & Whitney, East Hartford, Connecticut*, prepared for Pratt & Whitney.

Metcalf & Eddy, Inc. July 1993, *Draft Report - Klondike Area Site Investigation, UTC / Pratt & Whitney Facility, East Hartford, CT,* prepared for Pratt & Whitney.

Westinghouse Environmental and Geotechnical Services, Inc. November 1990, *Current Assessment Summary Report*, Pratt & Whitney, East Hartford, Connecticut, unpublished report for Pratt & Whitney.

Westinghouse Environmental and Geotechnical Services, Inc. 1990, *Preliminary Reconnaissance Survey of the Klondike Area*, Pratt & Whitney, East Hartford, Connecticut, unpublished report for Pratt & Whitney.

TABLES

Table 1 Monitoring Well Locations and Rationale Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut	
Monitoring Well ID	**Rationale/General Location**
NA-MW-01	Areal coverage - North Airport
NA-MW-02	Areal coverage - North Airport
NA-MW-03	Areal coverage - North Airport
NA-MW-04	Areal coverage - North Airport
NA-MW-05	Former Pickle Company
NA-MW-06	Former Pickle Company
NA-MW-07	Former Pickle Company
NA-PZ-01	Water levels - North Airport
NA-PZ-02	Water levels - North Airport
NA-PZ-03	Water levels - North Airport
NA-PZ-04	Water levels - North Airport
NA-PZ-05	Water levels - North Airport
NA-PZ-06	Water levels - North Airport
NA-PZ-07	Water levels - North Airport
NA-PZ-08	Water levels - North Airport
NA-PZ-09	Water levels - North Airport
NA-PZ-10	Water levels - North Airport
NA-PZ-11	Water levels - North Airport
NA-PZ-12	Water levels - North Airport
NK-MW-01	Northeastern property corner
NK-MW-02	Suntan Area
NK-MW-03	Suntan Area
NK-MW-04	Suntan Area
NK-MW-05	Suntan Area
NK-MW-06	Soil storage area
NK-MW-07	Former tank farm
NK-MW-08	Former PCB Storage Building
NK-MW-09	Former PCB Storage Building
NK-MW-10	Former PCB Storage Building
NK-MW-11	Former PCB Storage Building
NK-MW-12	South of Suntan Area Access Road
NK-MW-13	X-314 Test Stand
NK-MW-14S	X-410 and X-412 Test Stands
NK-MW-15S	Western North Klondike areal coverage
NK-MW-16	X-430 through X-436 Test Stands Steel Tank Area
NK-MW-17	North Klondike Soil Piles
NK-MW-18	X-430 Test Stand

Table 1 Monitoring Well Locations and Rationale Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut	
Monitoring Well ID	**Rationale/General Location**
NK-MW-19	X-401 Test Stand
NK-PZ-01	Water levels - North Klondike
NK-PZ-02	Water levels - North Klondike
SA-MW-01	Fire Training Area
SA-MW-02I	Contractor Storage Area
SA-MW-03	Fire Training Area
SA-MW-04	Contractor Storage Area & Former Soil Stockpile
SA-MW-05I	Monitor base of aquifer at SA-WM-05S
SA-MW-05S	Contractor Storage Area
SA-PZ-01	Water levels - South Airport
SA-PZ-02	Water levels - South Airport
SK-MW-01	South Klondike Graoundwater Quality
SK-MW-02	South Klondike Graoundwater Quality
SK-MW-03	South Klondike Graoundwater Quality
SK-MW-04	South Klondike Graoundwater Quality
SK-MW-05	Virgin Product Storage Area
SK-MW-06	Fire Training Area
SK-MW-07	Chemical Storage Building in Linde Area
SK-MW-08D	Base of aquifer at SK-MW-08S
SK-MW-08S	North-South Airport Area
SK-MW-09	Stratigraphy - Eastern property corner
SK-MW-10	Stratigraphy - Eastern property corner
SK-MW-11	Quonset Hut
SK-MW-12	Fire Training Area
SK-MW-13	Southeast property corner
SK-MW-14I	Storage Yard 3
SK-MW-15I	Former drum storage area south of Cryogenics Builidng
SK-MW-16	Fire Training Area and Tie-Down Area
SK-MW-19	Virgin Product Storage Area
SK-MW-20	Virgin Product Storage Area
SK-MW-21	Virgin Product Storage Area
SK-MW-22	Virgin Product Storage Area
SK-MW-23	Virgin Product Storage Area
SK-MW-24	Virgin Product Storage Area

Table 2
Monitoring Well Construction Data Summary
Airport and Klondike Areas, Pratt & Whitney, East Hartford, Connecticut

Monitoring Well ID	Completion Date	Easting	Northing	Reference Elevation	Top of Casing Elevation	Depth to Top of Screen	Depth to Base of Screen	Depth to Top of Filter Pack	Depth to Base of Filter Pack	Depth to Top of Seal	Depth to Base of Seal	Total Depth of Boring
NA-MW-01	10/11/91	183865.1	150087.8	46.09	46.31	5.30	15.30	4.30	15.30	2.30	4.30	
NA-MW-02	10/11/91	183169.3	147923.8	43.13	43.35	4.80	14.80	3.80	14.80	1.80	3.80	
NA-MW-03	10/11/91	184182.5	144746.6	43.06	43.30	4.50	14.50	3.50	14.50	1.50	3.50	
NA-MW-04	10/11/91	182454.9	146144.6	42.49	42.78	10.30	20.30	9.30	20.30	7.30	9.30	
NA-MW-05	02/20/97	184855.6	148308.3	47.91		2.25	11.25	1.25	11.25		1.25	
NA-MW-06	02/20/97	184617.2	149208.1	47.48		2.00	11.00	1.25	11.25	-2.00	1.25	
NA-MW-07	02/20/97	184335.3	147216.0	48.34		2.25	11.25	1.25	11.25		1.25	12.00
NA-PZ-01	11/13/91	183755.1	147369.5	42.72	44.11	5.00	10.00					
NA-PZ-02	11/13/91	183755.1	147369.5	43.80	44.11	5.00	10.00					
NA-PZ-03	11/13/91	182515.6	147279.1	43.19	43.49	5.00	10.00					
NA-PZ-04	11/13/91	182888.3	146907.3	41.45	41.66	5.00	10.00					
NA-PZ-05	11/13/91	183159.3	146629.3	41.32	41.59	5.00	10.00					
NA-PZ-06	11/13/91	183622.3	146232.5	40.80	41.02	5.00	10.00					
NA-PZ-07	11/13/91	183979.3	145976.8	43.67	43.94	5.00	10.00					
NA-PZ-08	11/13/91	182032.9	146148.7	40.74	40.89	5.00	10.00					
NA-PZ-09	11/13/91	182771.4	145889.8	40.48	40.76	5.00	10.00					
NA-PZ-10	11/13/91	183206.1	145538.2	43.35	43.63	5.00	10.00					
NA-PZ-11	11/13/91	183627.1	145197.7	42.19	42.48	5.00	10.00					
NA-PZ-12	11/13/91	184148.7	144778.3	43.13	43.13	5.00	10.00					
NK-MW-01	02/16/90	186195.2	148084.0	55.43	55.76	7.00	12.00	5.00	12.00	3.00	5.00	3.00
NK-MW-02	02/13/90	185325.7	147796.5	48.40	49.64	5.00	10.00	4.00	10.00	2.00	4.00	10.00
NK-MW-03	02/16/90	185362.9	148327.7	50.94	51.44	7.00	12.00	6.00	12.00	4.00	6.00	2.00
NK-MW-04	02/15/90	185331.2	148048.2	46.11	46.69	7.00	12.00	6.00	12.00	4.00	6.00	
NK-MW-05	02/13/90	184855.6	148308.3	46.65	47.70	4.00	9.00					10.00
NK-MW-06	10/01/91	184617.2	149208.1	50.57	50.76	4.00	11.50	3.00	11.50	1.00	3.00	
NK-MW-07	10/07/91	184335.3	147216.0	47.60	47.78	5.00	12.50	4.00	12.50	2.00	4.00	
NK-MW-08	10/07/92	184896.6	148429.1	50.96		4.00	11.00	3.50	11.00		3.50	11.00
NK-MW-09	10/07/92	184894.5	148385.6	50.43	50.60	4.00	11.00	3.00	11.00		3.00	11.00
NK-MW-10	10/07/92	184847.3	148392.2	49.78	49.90	3.50	10.50	2.50	11.00		2.50	11.00
NK-MW-11		184550.0	148365.0	46.75	46.75							
NK-MW-12		184223.3	147716.3	46.75		4.50	9.50					12.00
NK-MW-13		184459.3	147714.0	50.59		5.00	15.00					
NK-MW-14S		184887.7	147770.8	49.32		5.00	10.00					

Table 2
Monitoring Well Construction Data Summary
Airport and Klondike Areas, Pratt & Whitney, East Hartford, Connecticut

Monitoring Well ID	Completion Date	Easting	Northing	Reference Elevation	Top of Casing Elevation	Depth to Top of Screen	Depth to Base of Screen	Depth to Top of Filter Pack	Depth to Base of Filter Pack	Depth to Top of Seal	Depth to Base of Seal	Total Depth of Boring
NK-MW-15S		186014.8	147387.9	57.49		2.00	12.00					
NK-MW-16	05/17/93	185369.3	148354.0	51.44		3.50	13.50					
NK-MW-17	07/19/96	184560.7	148863.6	49.57		4.00	9.00					15.00
NK-MW-18	07/11/96	185358.2	148289.4	47.31		1.70	10.70					15.00
NK-MW-19	07/18/96	184560.9	148244.5	46.38		1.70	10.70	0.70	10.70	-1.30	0.70	15.00
NK-PZ-01		185328.8	148368.0	46.85								
NK-PZ-02		185339.5	148319.6	46.77								
SA-MW-01	02/13/90	182912.2	144567.5	42.12	42.99	13.00	18.00					
SA-MW-02I	02/16/90	181788.5	143840.1	37.04	37.78	15.00	25.00					
SA-MW-03	10/10/91	182546.9	144407.3	40.36	40.48	10.00	20.00					
SA-MW-04	02/06/98	181919.9	143583.9	38.13	38.31	7.50	17.50					17.50
SA-MW-05I	10/09/91	182358.5	143938.4	37.81	38.65	13.50	23.50					
SA-MW-05S	10/09/91	182359.7	143932.9	38.07	38.48	4.50	14.50					
SA-PZ-01	11/13/91	181881.2	145633.8	39.56	39.76	5.00	10.00					
SA-PZ-02	11/13/91	182103.7	145507.9	40.00	40.27	5.00	10.00					
SK-MW-01	02/20/90	185636.9	144814.9	50.45	51.22	8.00	13.00					
SK-MW-02	02/22/90	185424.2	145840.4	50.18	51.30	9.00	19.00					
SK-MW-03	02/23/90	185356.5	145553.5	49.70	49.91	6.00	16.00					
SK-MW-04	02/27/90	185636.9	145226.6	50.50	50.81	5.60	15.60					
SK-MW-05	02/13/90	184770.0	145767.4	47.19	47.80	6.00	11.00					
SK-MW-06	02/14/90	184740.7	146811.2	48.43	48.80	7.00	12.00					
SK-MW-07	02/15/90	185172.4	147005.9	51.06	52.19	8.00	13.00					
SK-MW-08D	02/23/90	184537.2	145559.5	45.02	45.21	49.00	59.00	47.00	59.00	45.00	47.00	
SK-MW-08S	02/16/90	184542.3	145560.0	42.92	43.43	7.50	12.50					
SK-MW-09	10/04/91	186692.4	146766.8	63.67	64.24	5.00	15.00					
SK-MW-10	10/09/91	186235.9	145509.2	55.24	55.52	5.00	15.00					
SK-MW-11	10/07/91	185100.2	146080.8	49.58	49.77	5.00	15.00					
SK-MW-12	10/02/91	184584.6	146773.0	45.92	46.34	4.50	14.50					
SK-MW-13	10/07/91	184869.3	144540.8	42.85	43.15	2.60	12.60					
SK-MW-14I	05/17/93	184985.2	145793.7	46.85		10.00	15.00					
SK-MW-15I	05/14/93	185236.6	146418.8	49.35		10.00	15.00					
SK-MW-16	05/13/93	184352.9	146630.4	45.28		4.50	9.50					
SK-MW-19	08/29/96	184607.1	146126.0	48.99		3.50	13.50	3.50	13.50			16.00

Table 2
Monitoring Well Construction Data Summary
Airport and Klondike Areas, Pratt & Whitney, East Hartford, Connecticut

Monitoring Well ID	Completion Date	Easting	Northing	Reference Elevation	Top of Casing Elevation	Depth to Top of Screen	Depth to Base of Screen	Depth to Top of Filter Pack	Depth to Base of Filter Pack	Depth to Top of Seal	Depth to Base of Seal	Total Depth of Boring
SK-MW-20	08/29/96	184672.7	145738.3	50.05		4.00	14.00	4.00	14.00			16.00
SK-MW-21	08/29/96	184710.1	145509.0	47.86		3.50	13.50	3.50	13.50			14.00
SK-MW-22	08/29/96	184748.8	145265.4	47.44		3.00	13.00	3.00	13.00			16.00
SK-MW-23	08/26/96	184573.4	145344.2	46.39		3.00	13.00					16.00
SK-MW-24	08/26/96	184824.5	146376.8	49.15		3.00	13.00	3.00	13.00			16.00

Table 3
Soil Physical Properties Data Summary
Airport and Klondike Areas, Pratt & Whitney, East Hartford, Connecticut

Boring ID	Sample Depth	Matrix Porosity	Grain Size Distribution Parameters						
			Cu	Cc	Percent Fine Gravel	Percent Coarse Sand	Percent Medium Sand	Percent Fine Sand	Percent Silt/Clay
NK-MW-06	5' - 7'	40.6	1.8	1.1	0.0	1.2	55.3	42.1	1.4
NK-MW-07		41.8	Not Reported						
NA-SB-01	10' - 12'	37.1	1.9	0.8	0.0	3.0	53.9	42.2	0.9
SK-MW-09	14' - 16'	40.5	2.3	0.8	4.2	4.3	58.5	32.8	0.2
SK-MW-13		43.3	Not Reported						
SK-SB-10		40.3	Not Reported						
SA-MW-04		36.6	Not Reported						
SA-MW-05		39.6	Not Reported						
SA-SB-03	15' - 17'	39.2	1.6	1.6	0.0	0.1	60.4	37.4	2.1

Notes: Soil physical properties data from Haley & Aldrich, 1993

Table 4
Area and Sampling Type Identifiers
Airport and Klondike Areas, Pratt & Whitney, East Hartford, Connecticut

Area Designation	Area	Sampling Type Identifier	Explanation
AB	Within A Building	MW	Monitoring Well
BB	Within B Building	PZ	Piezometer
CB	Within C Building	SW	Surface Water
DB	Within D Building	SD	Sediment
EB	Within E Building	CC	Concrete Chip
FB	Within F Building	SS	Surface Soil
GB	Within G Building	SB	Soil Boring
HB	Within H Building		
JB	Within J Building		
KB	Within K Building		
LB	Within L Building		
MB	Within M Building		
CS	Colt Street Facility		
EA	Engineering Area		
ET	Experimental Test Airport Laboratory		
LM	Area Outside Buildings L and M		
NA	North Airport Area		
NT	North Test Area		
NW	North Willgoos Area		
PH	Powerhouse Area		
SA	South Airport Area		
SK	South Klondike Area		
ST	South Test Area		
SW	South Willgoos Area		
WT	Waste Treatment Area		
XT	Experimental Test Area		

DRAWINGS

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GROUNDWATER INVESTIGATIONS X-194 AREA ABOVEGROUND STORAGE TANK LOCATION & CONSTITUENTS DETECTED MAP

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GROUNDWATER INVESTIGATIONS FORMER FIRING RANGE AREA LOCATION & CONSTITUENTS DETECTED MAP

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SURFACE WATER & SEDIMENT INVESTIGATIONS LOCATION & CONSTITUENTS DETECTED MAP

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DRAFT

ATTACHMENT A

Monitoring Well Construction Logs

NA-MW-01

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. NA-B-01

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 1
LOCATION N 150,088
E 183,865

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	--	RIG TYPE MOBIL B53
INSIDE DIAMETER (IN)	3-3/4	1-3/8	--	BIT TYPE --
HAMMER WEIGHT (LB)	--	140	-	DRILL MUD --
HAMMER FALL (IN)	--	30	-	OTHER

ELEVATION 46.3
DATUM MDC/NGVD
START 10 October 1991
FINISH 10 October 1991
DRILLER K. Christiana
H & A REP C. Osgood

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0						
		2	S1	1.0		Loose dark brown loamy SILT, little roots,
		2	20	3.0	44.3	trace fine sand
		8			2.0	-SOD/FILL-
		10				Medium dense brown fine SAND, little medium sand
						-STREAM TERRACE DEPOSITS-
5		5	S2	5.0		Loose gray fine SAND, trace medium sand
		5	12	7.0		
		5				
		4				
10		3	S3	10.0		Loose brown medium to fine SAND, trace coarse sand
		3	16	12.0		
		5				
		5				-STREAM TERRACE DEPOSITS-
15		2	S4	15.0	30.8	
		2	12	17.0	15.5	Soft gray laminated silty CLAY, trace fine sand in frequent partings
		2				
		2				
		2	S5	17.0		Medium stiff gray laminated silty CLAY, trace fine sand in frequent partings
		3	24	19.0		
		2				
		2				-GLACIOLACUSTRINE-
20		3	S6	20.0		
		2	16	22.0		
		3				
		3			24.3	Same as S5
					22.0	Bottom of Exploration at 22.0 ft.
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
10/10/91			5.0	7.0	5.5

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	22.0
ROCK CORED (LIN FT)	--
SAMPLES	6s

BORING NO. NA-B-01

NA-MW-02B

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. **NA-B-02**

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 1
LOCATION N 147,924
E 183,169

ELEVATION 43.4
DATUM MDC/NGVD
START 11 October 1991
FINISH 11 October 1991
DRILLER K. Christiana
H & A REP C. Osgood

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	----	RIG TYPE MOBIL B53
INSIDE DIAMETER (IN)	3-3/4	1-3/8	----	BIT TYPE ----
HAMMER WEIGHT (LB)	----	140	-	DRILL MUD ----
HAMMER FALL (IN)	----	30	-	OTHER

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0						
		5	S1	1.0		Medium dense dark brown loamy SILT, some roots, trace fine sand
		5	20	3.0	41.4	
		8			2.0	-SOD/FILL-
		9				Medium dense brown medium to fine SAND (stratified)
5		3	S2	5.0		Loose rusty brown medium to fine SAND
		3	6	7.0		
		1				
		3				-STREAM TERRACE DEPOSITS-
10		3	S3	10.0		Medium dense gray medium SAND, trace coarse sand, fine sand
		5	16	12.0		
		6				
		7				-STREAM TERRACE DEPOSITS-
					28.9	
					14.5	
15		2	S4	15.0		Soft gray laminated silty CLAY, trace red fine sand in frequent partings
		2	12	17.0		-GLACIOLACUSTRINE-
		2				
		2				
		1	S5	17.0		Very soft gray laminated silty CLAY, trace fine sand in frequent partings
		1	24	19.0		
		1				
		1			24.4	
					19.0	Bottom of Exploration at 19.0 ft.
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
10/11/92	1400		14.8	14.8	6.1

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	19.0
ROCK CORED (LIN FT)	----
SAMPLES	5s

BORING NO. **NA-B-02**

NA-MW-03

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. NA-B-03

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 1
LOCATION N 144,747
E 184,183

ELEVATION 43.3
DATUM MDC/NGVD
START 10 October 1991
FINISH 10 October 1991
DRILLER B. Ursin
H & A REP S. Gleason

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	--	RIG TYPE CME75
INSIDE DIAMETER (IN)	3-3/4	1-3/8	--	BIT TYPE --
HAMMER WEIGHT (LB)	--	140	-	DRILL MUD --
HAMMER FALL (IN)	--	30	-	OTHER

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0						
					41.8	-TOPSOIL-
		2	S1	1.0	1.5	Loose orange brown medium to fine SAND
		6	24	3.0	40.8	-FILL-
		6			2.5	
		5				Medium dense gray brown silty fine SAND, trace roots
					39.3	
					4.0	
5		4	S2	5.0		Medium dense brown fine SAND, trace silt, becomes medium to fine SAND, trace coarse sand
		5	20	7.0		
		5				-STREAM TERRACE DEPOSITS-
		5				
10		2	S3	10.0		Loose brown medium to fine SAND, pockets of fine SAND
		2	24	12.0		
		6				
		6				
					28.3	
15		1	S4	15.0	15.0	Soft gray silty CLAY, medium to fine sand partings
		2	8	17.0		
		2				-GLACIOLACUSTRINE-
		2				
		1	S5	17.0		Same as S4
		WOH	8	19.0		
		1				
		1			24.3	
					19.0	Bottom of Exploration at 19.0 ft.
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
10/10/91			5.0	7.0	5.0

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	19.0
ROCK CORED (LIN FT)	--
SAMPLES	5s

BORING NO. NA-B-03

NA - MW - 04

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. NA-B-04

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 1
LOCATION N 146,145
E 182,455

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	--	RIG TYPE CME75
INSIDE DIAMETER (IN)	3-3/4	1-3/8	--	BIT TYPE --
HAMMER WEIGHT (LB)	--	140	-	DRILL MUD --
HAMMER FALL (IN)	--	30	-	OTHER

ELEVATION 42.8
DATUM MDC/NGVD
START 10 November 1991
FINISH 10 November 1991
DRILLER B. Ursin
H & A REP S. Gleason

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0						
		3	S1	1.0		Loose brown medium to fine SAND, little silt
		4	23	3.0	40.8	-FILL-
		3			2.0	Loose brown loamy fine SAND
		3			40.3	-TOPSOIL-
					2.5	Loose brown medium to fine SAND
5		3	S2	5.0		Same as S1, varies to fine SAND, trace silt
		3	24	7.0		
		4				
		3				-STREAM TERRACE DEPOSITS-
10		2	S3	10.0		Same as S1, trace coarse SAND
		3	24	12.0		
		5				
		4				-STREAM TERRACE DEPOSITS-
15		3	S4	15.0		Same as S1
		4	24	17.0		
		5				
		5				
20		2	S5	20.0		Same as S1
		2	10	22.0	21.8	
		3			21.0	Medium stiff gray clayey SILT
		3				-GLACIOLACUSTRINE-
		2	S6	22.0		Same as S5, varved
		2	10	24.0		
		2				
		2			18.8	
25					24.0	Bottom of Exploration at 24.0 ft.

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
10/11/91		5.0	7.0	5.0	
10/15/91		20.5	OW	6.0	

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	24.0
ROCK CORED (LIN FT)	--
SAMPLES	6s

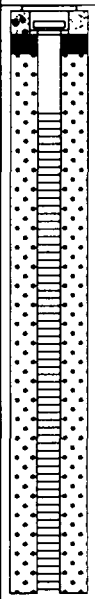
BORING NO. NA-B-04

MONITORING WELL COMPLETION LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford	**Start Date:** 2/20/97 **End Date** 2/20/97	**Boring ID** **NA-MW-05**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: Dave Brisson
Drilling Foreman: Jon Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elev./ Depth (Ft).	Well Construction Diagram	Sample Description Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesiveness
0 4 8 12 16 20 24		

COVER stick up
TYPE: ~~Flush Mount~~

BACKFILL
Type: N/A
Top Depth:
Bottom Depth:

CASING
Diameter: .5"
Length: 4'
Stick Up:

SEAL
Type: Bentonite
Quantity: 1/8 bag
Top Depth: Grade
Bottom Depth: 1'

SCREEN
Type: PVC Prepack Screen
Diameter: 1.5"
Slot Size: 0.010"
Top Depth: 2.25
Bottom Depth: 11.25'

FILTER PACK
Type: Native soil
Top Depth: 4.5'
Bottom Depth: 12.25

Comments:

Boring No: NA-MW-05

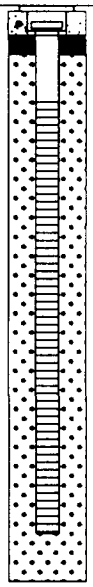
LOUREIRO ENGINEERING ASSOCIATES,PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (203)747-6181 Fax (203)747-8822

MONITORING WELL COMPLETION LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford	**Start Date:** 2/20/97 **End Date** 2/20/97	**Boring ID** **NA-MW-06**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: Dave Brisson
Drilling Foreman: Jon Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elev./ Depth (Ft).	Well Construction Diagram	Sample Description Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesiveness
0 4 8 12 16 20 24		Bottom of boring

COVER Stick up
TYPE: ~~Flush Mount~~

BACKFILL
Type: N/A
Top Depth:
Bottom Depth:

CASING
Diameter: .5"
Length: 4'
Stick Up:

SEAL
Type: Bentonite
Quantity: 1 cup
Top Depth: Grade
Bottom Depth: 1'

SCREEN
Type: PVC Prepack Screen
Diameter: 1.5"
Slot Size: 0.010"
Top Depth: 2'
Bottom Depth: 11'

FILTER PACK
Type: Native soil, natural to
Top Depth: 4.5'
Bottom Depth: 12.25'

Comments:

Boring No: NA-MW-06

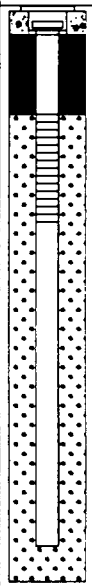
LEA
LOUREIRO ENGINEERING ASSOCIATES,PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (203)747-6181 Fax (203)747-8822

MONITORING WELL COMPLETION LOG

Project: Silver Lane Pickle Add. In. **LEA Comm No:** 68V7039 **Client:** Pratt & Whitney **Location:** East Hartford	**Start Date:** 2/20/97 **End Date** 2/20/97	**Boring ID** **NA-MW-07**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Macro Core
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: Dave Brisson
Drilling Foreman: Jon Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elev./ Depth (Ft).	Well Construction Diagram	Sample Description Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesiveness
0		Brown, fine SAND, little very fine SAND, trace organics, moist, moderate dense
4		Top 4": Grey, brown, coarse to fine SAND, little fill material (asphalt, concrete) moist, loose; Middle 6": Orange brown, fine SAND, moist, loose; Bottom 8": Brown, fine to very fine SAND, dense, moist
		Top 6": Dark brown, very fine SAND and SILT, little organic matter, moist, dense; Bottom 14": Grey, fine SAND, trace organic matter, wet, loose
8		Top 12": As above bottom 14"; Middle 4": Grey, coarse to fine SAND, wet, loose, slight TPH odor; Bottom 4": Grey, fine SAND, wet, loose
		Grey, fine to medium SAND, wet, loose
12		As above
		Bottom of boring at 12'
16		
20		
24		

COVER STICK UP
TYPE: ~~Flush Mount~~

BACKFILL
Type: N/A
Top Depth:
Bottom Depth:

CASING
Diameter: .5"
Length: 4'
Stick Up:

SEAL
Type: Bentonite
Quantity: 1/8 bag
Top Depth: grade
Bottom Depth: 4.5'

SCREEN
Type: PVC Prepack Screen
Diameter: 1.5"
Slot Size: 0.010"
Top Depth: 2.25'
Bottom Depth: 11.25'

FILTER PACK
Type: Natural native so
Top Depth: 4.5
Bottom Depth: 12

Comments: Well installed; screen 11' - 2' bags, riser 2' bags

Boring No: NA-MW-07

LOUREIRO ENGINEERING ASSOCIATES,PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (203)747-6181 Fax (203)747-8822

NK-mw-01

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2118 1 0 6 4

WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TURNEY STREET, GEORGETOWN, MA 01833
(508) 352-6492

Page	1 of 1
Boring/Well No.:	CAS-1
Westinghouse Job #:	
Well Elevation:	55.76
Drill Forman:	
Westinghouse Geologist:	DUFFIN
Start Date:	2-12-90
End Date:	2-12-90

Project Name: CAS
Client Name: U.T.C.
Boring Location: CAS-1
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	1	1-1.5	3-7-3		10			Medium Sand (~85% medium sand; 15% coarse sand), subrounded - subangular, well sorted, loose, moist, dark yellowish brown (10 YR/4/6), grains are dominantly quartz with about 5% mafics and heavy minerals, fluvial sand.
1.5	2	1.5-3	12-13-13		12			1.5 Coarse Sand (~90% coarse sand; 10% very coarse sand), subrounded - subangular, moderately sorted, loose, wet, dark yellowish brown (10 YR/4/4), grains are dominantly quartz with < 10% mafics and heavy minerals, fluvial sand.
3.0	3	3-4.5	5-10-18		10			
4.5	4	4.5-6	10-16-18		18			Medium - Coarse Sand; similar to above.
6.0	5	6-7.5	9-20-76		15			
7.5	6	7.5-9	100		5			7.5 Sandstone boulder, silty, medium grained sandstone, cemented, dusky red (10 R/3/4), weathered Portland Formation(?). Refusal at 7.10.
9.0	7	9-10.5	23-41-30		3			Silty, medium grained sandstone, subrounded - subangular, moderately-poorly sorted, weakly cemented, wet, dusky red (10 R/3/4), weathered Portland Formation.
10.5	8	10.5-12	21-44-120		15			Moderately cemented; less weathered. T.D. = 12'
12.0								

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:

2" Well Point at 12.0'
5.0' screen with .010" slots set at 7-12' depth
9.0' riser; 2.0' stickup. Quartz sand pack from 12-6' depth.
Bentonite pellets from 6-3' depth. Backfilled 3.0-0' depth.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
2-7-90	8:00 AM	5.47'	55.76	

WESTINGHOUSE BORING NUMBER: CAS-1

Westinghouse form "BL/P1 Rev. 1 8/1/89

NK-MW-02

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21180-1-0000

WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TURNKEY STREET, CANTON, MA 02021
(617) 821-7440

Test No.	1 of 2
Boring No.	CAS-4
Westinghouse Job #	
Well Elevation:	49.84
Grd. Form:	
Westinghouse Geologist:	DUFFIN
Start Date	2-14-90
End Date	2-14-90

Project Name: CAS
Client Name: U.T.C.
Boring Location: CAS-4
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER — Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
0	1	0-2	5-3-1-1		16			Peat with organic-rich sand, soil.
0.4								Very Fine - Medium Sand, subrounded - subangular, poorly sorted, loose, moist, very dark grayish brown (10 YR/3/2), grains are dominantly quartz; mafics and heavy minerals compose about 5%; pinkish K-feldspar (?) < 5%, soil developed in fluvial sand (?).
1.0								
2.0	2	2-4	8-12-15-20		14			
3.0								Wet.
4.0	3	4-6	7-11-11-11		14			Very Fine - Fine Sand; similar to above.
5.0								
6.0	4	6-8	7-8-8-10		24			Fine - Medium Sand; similar to above.
7.0								
8.0	5	8-10	4-5-8-8		24			
8.0								Medium - Coarse Sand, subrounded - subangular, moderately-well sorted, loose, wet, dark grayish brown (10 YR/4/2), grains are dominantly quartz with about 10% mafics and heavy minerals; 5% pinkish K-feldspar (?), roots and Fe-coloration throughout sample suggests soil horizonation developed in fluvial sand.
9.0								

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

GA/QC CHECKED BY:

NOTES:

2" Well Point at 10.0'
5.0' screen with .010" slots set at 10-5' depth.
7.0' riser, 2.0' stickup. Quartz sand pack from 10-4' depth.
Bentonite pellets from 4-2' depth. Backfilled 13-10'; 2.0-0' depth.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	4:00 PM	4.91'	49.84	

WESTINGHOUSE BORING NUMBER: CAS-4

Westinghouse form "BL/P1 Rev. 1 8/1/89

NK-MW-02

WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TENNEY STREET, GEORGETOWN, MA 01833
(508) 352-6402

Page	2 of 2
Boring/Well No.:	CAS-4
Westinghouse Job #:	
Well Elevation:	49.84
Drill Forman:	
Westinghouse Geologist:	DUFFIN
Start Date:	2-14-90
End Date:	2-14-90

Project Name: CAS
Client Name: U.T.C.
Boring Location: CAS-4
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	6	10-12	3-5-5-5		24			Slightly Coarser grained than sample above; 3 mm thick purple band in middle of spoon sample (hematite (?).
11.0								
12.0	7		2-2		12			11.8 Clay, wet, cohesive, finely laminated into very(?) soft silter, red laminae (10 R/4/6) alternate with clay-rich, dark gray (5 Y/4/2) laminae lacustrine clay-silt.
								T.D. = 13'
13.0								
14.0								

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

CA/DC CHECKED BY:

NOTES:

2" Well Point at 10.0'
5.0' screen with .010" slots set at 10-5' depth.
7.0' riser. 2.0" silicsub. Quartz sand pack from 10-4' depth.
Bentonite pellets from 4-2' depth. Backfilled 13-10'; 2.0-0' depth.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	4:00 PM	4.91'	49.84	

WESTINGHOUSE BORING NUMBER: CAS-4

Westinghouse form "BL/P1 Rev. 1 8/1/88

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NK-MW-03

WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TURNPIKE STREET, CHELMSFORD, MA 01833
(508) 352-6442

Page	1 of 1
Boring/Well No.:	CAS-7
Westinghouse Job #:	
Well Elevation:	51.44
Drill Foreman:	
Westinghouse Geologist:	DUFFIN
Start Date:	2-14-90
End Date:	2-15-90

Project Name: CAS
Client Name: UTC
Boring Location: CAS-7
Drilling Contractor: C. WELTI ASSOC
Drilling Method: HOLLOW STEM AUGER — Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

Depth (FT)	Sample Type & No.	Range From – To	Standard Penetration Test: Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	1	0-2	2-3-6-8		14			
2.0	2	2-4	4-7-14-17		20			Clayey Sand, roots, soil.
4.0	3	4-6	8-18-17-21		24		4.0	Fine – Medium Sand with Clay, subangular – subrounded, moderately sorted, loose, moist, roots, dark brown (10 YR/3/3), grains are dominantly quartz with < 5% mafics and heavy minerals, soil developed in fluvial sand.
6.0	4	6-8	14-14-12-18		24			Same as above but sample lacks clay and roots; bands of hematite staining, fluvial sand.
8.0	5	8-10	6-6-8-11		24			Wet.
10.0	6	10-12	0-3-6-12					Slightly coarser grained than sample above.
12.0	7	12-14	3-4-5-8		18		12.8	Clay, wet, cohesive, finely laminated into varves (?); each varve set is ~ 1 cm thick composed of 3 distinct lamina (a silt(?), 1.25 mm thick, dusky red (10 R/3/4) lamina followed by a 1.25 mm thick, very pale brown (10 YR/7/4) lamina, capped by a clay-rich, 2.5 mm thick, grayish brown (2.5 Y/3/2) lamina, lacustrine clay-silt.
14.0								T.D. = 14'

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 – 4	v. loose	< 2	v. soft
4 – 10	loose	2 – 4	soft
10 – 30	m. dense	4 – 8	m. stiff
30 – 50	dense	8 – 15	stiff
> 50	v. dense	15 – 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:
2" Well Point at 12.0'
5.0' screen with .010" slots set at 12-7' depth.
9.0' riser, 2.0' stickup. Quartz sand pack from 12-5' depth.
Bentonite pellets from 5-3' depth. Backfilled from 14-12'; 3-0'.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	12:30 PM	8.35'	51.44	

WESTINGHOUSE BORING NUMBER: CAS-7

Westinghouse form "BL/P1 Rev. 1 8/1/89

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NK-MW-04

WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TENNEY STREET, GEORGETOWN, MA 01833
(508) 352-6492

Page 1 of 1
Boring/Well No.: CAS-8
Westinghouse Job #:
Well Elevation: 46.69
Drill Foreman:
Westinghouse Geologist: DUFFIN
Start Date: 2-15-90
End Date: 2-15-90

Project Name: CAS
Client Name: UTC
Boring Location: CAS-8
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER
Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	1	0-2	0-23-12-14		12			Asphalt (parking lot) and fill.
								Fine - Medium Sand, subangular - subrounded, moderately sorted, loose, moist, brown (10 YR/4/3), grains are dominantly quartz with < 5% mafics and heavy minerals, fluvial sand. — 0.8
2.0	2	2-4	18-24-28-33		18			
4.0	3	4-6	14-13-12-10		22			— 5.0
								Medium - Coarse Sand, subangular - subrounded, moderately-well sorted, loose, wet, some orange hematite staining, brown (10 YR/4/3), grains are dominantly quartz with < 5% mafics and heavy minerals, fluvial sand.
6.0	4	6-8	2-3-12-15		22			
8.0	5	8-10	0-3-6-8		20			
10.0	6	10-12	2-6-6-8		24			More mafics and heavy minerals.
								— 11.8
12.0								Clay, wet, cohesive.
								T.D. = 12'

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:

2" Well Point at 12.0'
5.0' screen with .010" slots set at 12-7' depth
6.5' riser. Quartz sand pack from 12-5' depth.
Bentonite pellets from 5-3' depth. Backfilled 3.0-0' depth.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90		1.92'	46.69	

WESTINGHOUSE BORING NUMBER: CAS-8

Westinghouse form "BL/P1 Rev. 1 8/1/89

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2118 1-09-15

NK-MW-05

CONFIDENTIAL

2118 11 0507

WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TURNEY STREET, GEORGETOWN, MA 01833
(508) 352-6482

Page 1 of 1
Boring/Well No.: CAS-3
Westinghouse Job #:
Well Elevation: 47.67
Drill Forman:
Westinghouse Geologist: DUSTIN
Start Date: 2-13-90
End Date: 2-13-90

Project Name: CAS
Client Name: U.T.C.
Boring Location: CAS-3
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	1	0-2	1-4-8-10		23			Fine - Medium Sand, subrounded - subangular, moderately-well sorted, loose, moist, grayish brown (2.5 Y/5/2), grains are dominantly quartz with < 5% mafics and heavy minerals, fluvial sand.
2.0	2	2-4	10-14-14-14		21			Mafics and heavy minerals more common.
								3.0
4.0	3	4-6	8-9-12-13		19			Medium - Coarse Sand, subrounded - subangular, moderately sorted, loose, moist, dark grayish brown (10 YR/4/2), grains are about 80% quartz with 10% mafics and heavy minerals and 10% pink-red K-feldspar (?), fluvial sand.
6.0	4	6-8	10-12-12-13		24			Slightly coarser than above. Wet
8.0	5	8-10	6-6-6-5		24			
								8.0
								Clay, wet, cohesive, finely laminated into varve (?) sets: ~3 mm dark gray laminae (5 Y/4/1) alternates with ~2 mm thick gray laminae (5 Y/5/1); thicker laminae is silter, lacustrine clay.
								T.D. = 10'

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:

2" Well Point at 12.0'
5.0' screen with .010" slots set at 9-4' depth
5.0' riser; 2.0' stickup. Quartz sand pack from 9-2' depth.
Bentonite pellets from 2-1' depth. Backfilled 1.0-0' depth.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	10:00 AM	7.08'	47.67	

WESTINGHOUSE BORING NUMBER: CAS-3

Westinghouse form "BL/P1 Rev. 1 8/1/89

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. NK-MW-06

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 1
LOCATION N 149,208
E 184,617
ELEVATION 49.0
DATUM MDC/NGVD
START 1 October 1991
FINISH 1 October 1991
DRILLER B. Ursin
H & A REP C. Osgood

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	--	RIG TYPE CME75
INSIDE DIAMETER (IN)	3-3/4	1-3/8	--	BIT TYPE --
HAMMER WEIGHT (LB)	--	140	-	DRILL MUD --
HAMMER FALL (IN)	--	30	-	OTHER

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0						
		6	S1	1.0		Medium dense brown medium to fine SAND, little fine gravel
		13	18	3.0		
		8				
		9			46.0	-FILL-
					3.0	
5		6	S2	5.0		Medium dense red-brown medium SAND, trace fine sand
		7	10	7.0		
		6				
		8				-STREAM TERRACE DEPOSITS
10		2	S3	10.0		Very loose red-brown medium SAND
		2	10	12.0		
		1			37.5	
		2			11.5	
		3	S4	12.0		Very soft red-gray laminated silty CLAY, trace fine sand in frequent partings
		2	14	14.0		-GLACIOLACUSTRINE-
		2				
		3				
		2	S5	14.0		Very soft gray laminated silty CLAy, trace fine sand in frequent partings
15		2	11	16.0		-GLACIOLACUSTRINE-
		2				
		2			33.0	
					16.0	Bottom of Exploration at 16.0 ft.
						Note: Observation well installed at 11.5 ft.
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
10/1/91	1300		10.0	11.9	5.4

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	16.0
ROCK CORED (LIN FT)	--
SAMPLES	5s

BORING NO. NK-MW-06

NK-MW-07

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. NK-MW-07

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 1
LOCATION N 147,216
E 184,335

ELEVATION 46.0
DATUM MDC/NGVD
START 7 October 1991
FINISH 7 October 1991
DRILLER B. Ursin
H & A REP C. Osgood

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	--	RIG TYPE CME75
INSIDE DIAMETER (IN)	3-3/4	1-3/8	--	BIT TYPE --
HAMMER WEIGHT (LB)	--	140	-	DRILL MUD --
HAMMER FALL (IN)	--	30	-	OTHER

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0						
		10	S1	1.0		Dense brown silty fine SAND, some gravel,
		21	20	3.0		trace coarse to medium sand
		14			43.5	-FILL-
		6			2.5	Medium dense dark brown fine SAND, trace silt
5		1	S2	5.0		Very loose gray-brown fine SAND, little medium
		1	24	7.0		sand
		2				-STREAM TERRACE DEPOSITS-
		2				
10		2	S3	10.0		Loose gray medium to fine SAND
		3	24	12.0		
		4			34.5	
		4			11.5	Medium stiff gray laminated silty CLAY
		1	S4	12.0		Very soft gray laminated silty CLAY, trace
		1	24	14.0		fine sand in frequent partings.
		1				-GLACIOLACUSTRINE-
		1				
		1	S5	14.0		
15		1	24	16.0		Very soft gray laminated silty CLAY
		1				
		1			30.0	
					16.0	Bottom of Exploration at 16.0 ft.
						Note: Observation well installed at 11.5 ft.
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
10/7/91	1030		10.0	11.4	8.4
10/7/91	1430		12.5	12.5	8.1

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	16.0
ROCK CORED (LIN FT)	--
SAMPLES	5s

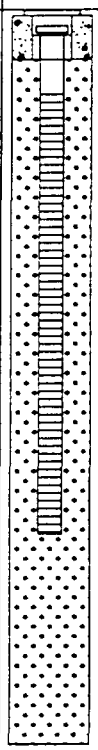
BORING NO. NK-MW-07

MONITORING WELL COMPLETION LOG

Project: X-430 Area **LEA Comm No:** 68TR653 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date:** 07/11/96 **End Date** 07/11/96	**Boring ID** **NK-MW-18**

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Large Bore
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elev./ Depth (Ft).	Well Construction Diagram	Sample Description Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesiveness
0		Dark brown black, fine SAND, some Silt, little medium SAND, trace(-) coarse Sand, moist, moderately loose, roots
		6": As Above; 17": Brown, medium SAND and fine SAND, some coarse Sand, little Silt, trace(-) fine Gravel, loose, wet at approximately 3.0' - 3.5'
4		As Above; slight hydrocarbon odor
		19": Reddish brown, fine SAND and SILT, slightly stiff, slight hydrocarbon odor, wt; 4": Dark brown, medium SAND, some fine Sand, little coarse Sand, trace(+) Silt, trace(-) fine Gravel, loose, wet
8		As Above
		17": As Above; 6": Olive grey, varved CLAY, trace(+) Silt, trace(-) fine Sand, stiff, wet
12		As Above
		As Above
		Bottom of Boring at 15.0'
16		
20		
24		

COVER
TYPE: Flush Mount

BACKFILL
Type: N/A
Top Depth:
Bottom Depth:

CASING
Diameter: 0.5"
Length: 1.7'
Stick Up:

SEAL
Type: Med.Bent.Chips
Quantity: 1/4 bag
Top Depth: 0.5'
Bottom Depth: 1.0'

SCREEN
Type: See Comments
Diameter: As Above
Slot Size: 0.01"
Top Depth: 1.7'
Bottom Depth: 10.7'

FILTER PACK
Type: 20/40 Sand
Top Depth: 1.0'
Bottom Depth: 11.7'

Comments: Screen consists of stainless steel wire mesh of 1.5" O.D. internally prepacked with 20/40 silica sand and a inside Schedule 80 PVC screen of 0.5" I.D.; Borehole collapsed from bottom of boring to 11.7 feet. Borehole backfilled with bentonite.

Boring No: NK-MW-18

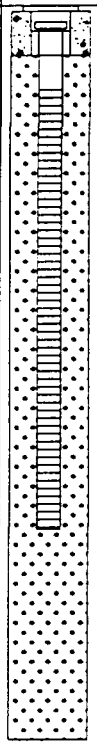
LEA
LOUREIRO ENGINEERING ASSOCIATES,P.C.
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (203)747-6181 Fax (203)747-8822

MONITORING WELL COMPLETION LOG

Project: X401 Area **LEA Comm No:** 68TR656 **Client:** Pratt & Whitney **Location:** East Hartford, CT	**Start Date:** 7/18/96 **End Date** 7/18/96	**Boring ID** NK-MW-19

Drilling Contractor: LEA
Drilling Method: Geoprobe
Sampling Method: Large Bore
Groundwater Observations:
Depth: NM **At:** **Hours**
Depth: **At:** **Hours**

Logged By: L. Bianchi
Drilling Foreman: J. Sweeton
Drill Rig: Geoprobe 5400
Surface Elevation:
Northing:
Easting:

Elev./ Depth (Ft).	Well Construction Diagram	Sample Description Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesiveness
0		5": Dark brown, fine SAND some Silt, little medium Sand, trace(-) coarse Sand, moist, slightly loose; 18": Light yellowish brown, medium Sand, some fine Sand, little coarse Sand, trace Silt, moist, loose
		As Above; wet at 3.5'
4		9": As Above; 10": Dark greyish brown, fine SAND wilt Silt, trace medium Sand, wet, slightly dense
		7": As Above; 12": greyish/brown, medium SAND with fine Sand, some coarse Sand, trace(+) fine Gravel, trace(-) Silt, wet, loose
8		5": As Above; 18": Greyish brown, fine SAND, with Silt, trace medium Sand, wet, slightly loose
		10": As Above; 13": Olive grey, varved CLAY, trace(+) Silt, trace(-) fine Sand, wet, stiff
12		As Above
		As Above
16		Bottom of Boring at 15.0'
20		
24		

COVER
TYPE: Flush Mount

BACKFILL
Type: N/A
Top Depth:
Bottom Depth:

CASING
Diameter: 0.5"
Length: 1.7'
Stick Up:

SEAL
Type: Med. Bent. Chip
Quantity: 1/4 bag
Top Depth: 0.5'
Bottom Depth: 1.0'

SCREEN
Type: See Comments
Diameter: As Above
Slot Size: 0.01"
Top Depth: 1.7'
Bottom Depth: 10.7'

FILTER PACK
Type: 20/40 Sand
Top Depth: 1.0'
Bottom Depth: 11.7'

Comments: Screen consists of stainless steel wire mesh of 1.5" O.D. internally prepacked with 20/40 silica sand and an inside Schedule 80 PVC screen of 0.5" I.D.; Borehole collapsed from bottom of boring to 11.7 feet.

Boring No: NK-MW-19

LEA
LOUREIRO ENGINEERING ASSOCIATES,PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (203)747-6181 Fax (203)747-8822

SA-MW-01

WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TURNEY STREET, GEORGETOWN, MA 01833
(508) 352-6492

Boring/Well No. CAS-2
Westinghouse Job #
Well Elevation: 42.69
Drill Foreman:
Westinghouse Geologist: DUFFIN
Start Date: 2-12-90
End Date: 2-13-90

Project Name: CAS
Client Name: UTC
Boring Location: CAS-2
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER
Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test: Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	1	1-1.5	14-40-23		4			
1.5	2	1.5-3	20-15-10		0			Sandy material with pebble-size rock fragments, fill.
3.0	3	3-4.5	8-5-3		4			Cobble-size piece of material jammed tube.
4.5	4	4.5-6	8-12-15		15			4.5 — Fine - Medium Sand, subrounded - subangular, moderately sorted, loose, moist, dark yellowish brown (10 YR/4/4), grains are dominantly quartz, fluvial sand.
8.0	5	6-7.5	8-14-14		14			8.0 — Medium - Coarse Sand (~95% medium-coarse sand; 5% very coarse-granular sand), subrounded - subangular, moderately-poorly sorted, loose, moist, dark yellowish brown (10 YR/3/4), grains are dominantly quartz with < 5% mafics and heavy minerals, fluvial sand.
7.5	6	7.5-9	5-12-18		18			
9.0	7	9-10.5	5-10-14					Slightly Coarser than above, wet, mafics increase to 10%.
10.5	8	10.5-12.5	8-3-3-11		19			Slightly finer; less mafics.
12.5	9	12.5-14.5	8-10-9-14		20			12.5 — "Flowing Sand": Fine - Medium Sand, subrounded - subangular, moderately-well sorted, loose, wet, brown (10 YR/11/3), grains are dominantly quartz, mafics and heavy minerals compose < 10%, fluvial sand.
14.5	10	14.5-16.5	7-14-13-14		27			

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:
2" Well Point at 18.0'
6.0' screen with .010" slots set at 13-18' depth
8.0' riser; 2.0' stickup. Quartz sand pack from 18-10.5' depth.
Bentonite pellets from 10.5-6' depth. Backfilled 6.0-0' depth.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	6:00 PM	9.73'	42.69	

WESTINGHOUSE BORING NUMBER: CAS-2

Westinghouse form "BL/P1 Rev. 1 8/1/88

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2-1-18 - CD CD

SA-MW-01

WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TURNEY STREET, COCHITUATE, MA 01813
(508) 651-6492

Page: 2 of 2
Boring/Well No.: CAS-2
Westinghouse Job #:
Well Elevation: 42.99
Drill Foreman:
Westinghouse Geologist: DUFFIN
Start Date: 2-12-90
End Date: 2-13-90

Project Name: CAS
Client Name: UTC
Boring Location: CAS-2
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER
Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	11	18.5–18.5	0–10–15–12		18			"Flowing" Sand – No Sample.
18.5		18.5–20	NO SAMPLE		0			20.0 Medium – Coarse Sand, suorounded – subangular, moderately sorted, loose, wet, brown (10 YR/4/3), grains are dominantly quartz; mafics compose < 5% fluvial sand. 20.5
20.5	12	20–20.5						
	13		0–2–2–3		23			Silty Clay, wet, cohesive, laminations range in thickness from < 1 mm – 1 cm (some suggest silt-clay varves); some soft sediment deformation, olive-grey (5 Y/4/2); lacustrine clay.
								T.D. = 22'

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 – 4	v. loose	< 2	v. soft
4 – 10	loose	2 – 4	soft
10 – 30	m. dense	4 – 8	m. stiff
30 – 50	dense	8 – 15	stiff
> 50	v. dense	15 – 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:

2" Well Point at 18.0'
5.0' screen with .010" slots set at 13–18' depth
8.0' riser; 2.0' stickup. Quartz sand pack from 18–10.5' depth.
Bentonite pellets from 10.5–6' depth. Backfilled 6.0–0' depth.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	8:00 PM	9.73'	42.99	

WESTINGHOUSE BORING NUMBER: CAS-2

Westinghouse form "BL/P1 Rev. 1 8/1/89

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2118-1-0060

SA-MW-02

CONFIDENTIAL

2118 1 0 0 1

WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TURNEY STREET, GEORGETOWN, MA 01833
(508) 352-6492

Page 1 of 2
Boring/Well No.: CAS-11
Westinghouse Job #:
Well Elevation: 37.78
Drill Foreman:
Westinghouse Geologist: DUFFIN
Start Date: 2-16-90
End Date: 2-16-90

Project Name: CAS
Client Name: U.T.C.
Boring Location: CAS-11
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER
Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	1	0-2	4-7-4-4		8			
2.0	2	2-4	2-3-5-6					Clayey Sand, roots, soil or fill.
								4.0
4.0	3	4-6	5-6-8-8		12			Medium Sand (coarse sand composes about 15%), subangular - subrounded, moderately-well sorted, loose, moist, dark yellowish brown (10 YR/4/6), grains are dominantly quartz with about 5% mafics, fluvial sand.
6.0	4	6-8	7-7-7-7		18			Same as above except contains slightly more mafics.
8.0	5	8-10	4-6-6-7					Same as above except is wet.
10.0	6	10-12	3-5-7-10		14			Slightly coarser-grained than sample above.
12.0	7	12-14	7-8-14-13					
								14.0
14.0	8	14-16	3-7-10-15		24			Medium - Coarse Sand, subangular - subrounded, moderately sorted, loose, wet, brown (10 YR/4/3), grains are dominantly quartz with about 10% mafics and heavy minerals, fluvial sand.
16.0	9	16-18	10-4-4-7		24			Slightly coarser grained than sample above.
18.0	10	18-20	3-2-1-3					

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:

2" Well Point at 25.0'
10.0' screen with .010" slots set at 25-15' depth.
17.0' riser. 2.0' stickup. Quartz sand pack from 25-13' depth.
Bentonite pellets from 13-11' depth. Backfilled 11.0-0' depth.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	8:30 PM	12.25	37.78	

WESTINGHOUSE BORING NUMBER: CAS-11

Westinghouse form "BL/P1 Rev. 1 8/1/89

SA-MW-02

CONFIDENTIAL

WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.

118 TENNEY STREET, GEORGETOWN, MA 01833
(508) 352-6492

Page: 2 of 2
Boring/Well No.: CAS-11
Westinghouse Job #:
Well Elevation: 37.78
Drill Forman:
Westinghouse Geologist: DUFFIN
Start Date: 2-16-90
End Date: 2-16-90

Project Name: CAS
Client Name: U.T.C.
Boring Location: CAS-11
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	11	20-22	8-6-10-11		19			
22.0	12	22-24	0-5-8-13		24			
24.0	13	24-26	5-7-9-15		24			
							25.8	Very Fine Sand, subangular, moderately sorted, loose, wet, olive gray (5 Y/5/2), lacustrine sand (?).
26.0	14	26-28	13-15-17-20		8			
28.0	15	28-30	3-5-5-7		12		28.0	Clay - Silt, wet, fairly cohesive, dark olive gray (5 Y/3/2), no sedimentary structures visible, lacustrine clay-silt.
								T.D. = 30'

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:

2" Well Point at 25.0'
10.0' screen with .010" slots set at 25-15' depth.
17.0' riser, 2.0' stickup. Quartz sand pack from 25-13' depth.
Bentonite pellets from 13-11' depth. Backfilled 11.0-0' depth.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	6:30 PM	12.25	37.78	

WESTINGHOUSE BORING NUMBER: CAS-11

Westinghouse form "BL/P1 Rev. 1 8/1/89

2118 - 0075

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. SA-B-03

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 2
LOCATION N 144,407
E 182,547

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	--	RIG TYPE MOBIL B53
INSIDE DIAMETER (IN)	3-3/4	1-3/8	--	BIT TYPE --
HAMMER WEIGHT (LB)	--	140	-	DRILL MUD --
HAMMER FALL (IN)	--	30	-	OTHER

ELEVATION 38.9
DATUM MDC/NGVD
START 9 October 1991
FINISH 9 October 1991
DRILLER K. Christiana
H & A REP S. Osgood

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0					37.9	Gray brown fine SAND, trace roots, silt and wood
		5	S1	1.0	1.0	-FILL-
		5	12	3.0		Medium dense brown fine SAND, little silt, trace loam
		7				-STREAM TERRACE DEPOSITS-
		6				
5		3	S2	5.0		Loose brown fine SAN[
		3	19	7.0		
		4			32.4	
		5			6.5	Loose brown medium SAND, little fine sand
						-STREAM TERRACE DEPOSITS-
10		4	S3	10.0		Medium dense brown medium SAND, trace fine sand
		6	10	12.0		
		10				
		12				
15		4	S4	15.0		Medium dense brown medium SAND, trace fine sand
		7	24	17.0		
		7				
		7				-STREAM TERRACE DEPOSITS-
20		7	S5	20.0		Medium dense brown medium to fine SAND
		6	11	22.0		
		5				
		7				
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
10/9/91	1415		20.0	21.1	6.1
10/10/91	0815		20.0	20.0	8.6
10/10/91	1130		20.0	20.0	12.6

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	31.0
ROCK CORED (LIN FT)	--
SAMPLES	8s

BORING NO. SA-B-03

SA-MW-03

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. SA-B-03
FILE NO. 90358-40
SHEET NO. 2 of 2

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
25		1	S6	25.0		Medium dense brown medium to fine SAND
		2	12	27.0		
		3			12.4	
		5			26.5	Stiff gray laminated silty CLAY, trace fine sand
		3	S7	27.0		
		2	15	29.0		Stiff gray laminated silty CLAY, trace fine sand in frequent partings
		6				-GLACIOLACUSTRINE-
		5				
		2	S8	29.0		Soft gray laminated silty CLAY, trace fine sand in frequent partings
30		2	16	31.0		
		2			7.9	
					31.0	Bottom of Exploration at 31.0 ft.
35						
40						
45						
50						
55						
60						

BORING NO. SA-B-03

SA-MW 04

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. SA-MW-04

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 2
LOCATION N 143,584
E 181,920

ELEVATION 36.3
DATUM MDC/NGVD
START 7 October 1991
FINISH 8 October 1991
DRILLER B. Ursin
H & A REP C. Osgood

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	--	RIG TYPE CME75
INSIDE DIAMETER (IN)	3-3/4	1-3/8	--	BIT TYPE --
HAMMER WEIGHT (LB)	--	140	-	DRILL MUD --
HAMMER FALL (IN)	--	30	-	OTHER

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0					35.3	Visible in borehole: Brown gravelly coarse to fine SAND, trace asphalt, roots
		4	S1	1.0	1.0	-FILL-
		4	24	3.0		Loose brown medium to fine SAND, trace silt
		3				
		3				
5		4	S2	5.0		Loose brown medium to fine SAND
		4	12	7.0		
		3				
		3				-STREAM TERRACE DEPOSITS-
10		3	S3	10.0		Loose brown medium to fine SAND, trace coarse sand
		4	17	12.0		
		3				
		3				
15		4	S4	15.0		Loose brown medium SAND, little coarse sand, fine sand
		3	18	17.0		
		4				
		7				-STREAM TERRACE DEPOSITS-
20		2	S5	20.0		Very loose brown medium SAND, little coarse sand, trace fine sand
		1	15	22.0		
		2				
		4				
		4	S6	24.0		Loose brown medium SAND, little coarse sand
25		4	24	26.0	11.3	

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
10/7/91	1530		24.0	25.5	9.3
10/8/91	0730		23.0	21.0	9.1

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	30.0
ROCK CORED (LIN FT)	--
SAMPLES	8s

BORING NO. SA-MW-04

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. SA-MW-04
FILE NO. 90358-40
SHEET NO. 2 of 2

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
25		4			25.0	Loose gray laminated fine sandy SILT
		6				
		12	S7	26.0		Loose gray laminated silty fine SAND
		14	14	28.0		
		21				-GLACIOLACUSTRINE-
		33			8.3	
		2	S8	28.0	28.0	Loose gray laminated clayey SILT, some fine sand
		2	16	30.0		
		3				
30		3			6.3	
					30.0	Bottom of Exploration at 30.0 ft.
35						
40						
45						
50						
55						
60						

SA-MW-05

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. SA-B-05

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 2
LOCATION N 143,933
E 182,360
ELEVATION 36.7
DATUM MDC/NGVD
START 8 October 1991
FINISH 8 October 1991
DRILLER B. Ursin
H & A REP S. Gleason

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	--	RIG TYPE CME75
INSIDE DIAMETER (IN)	3-3/4	1-3/8	--	BIT TYPE --
HAMMER WEIGHT (LB)	--	140	-	DRILL MUD --
HAMMER FALL (IN)	--	30	-	OTHER

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0					35.7	-TOPSOIL-
		3	S1	1.0	1.0	Loose brown medium to fine SAND, some areas
		3	24	3.0		trace silt
		3				
		3				
5			S2	5.0		Same as S1
			24	7.0		
						-STREAM TERRACE DEPOSITS-
10			S3	10.0		Same as S1
			24	12.0		
15			S4	15.0		Brown coarse to fine SAND, trace fine gravel
			24	17.0		
						-STREAM TERRACE DEPOSITS-
20		3	S5	20.0		Same as S4
		3	24	22.0		
		3			15.2	
		3			21.5	
		3	S6	22.0		Medium stiff gray silty fine SAND
		4	24	24.0	13.7	
		3			23.0	
		4				
		1	S7	24.0		Soft gray fine sandy SILT, trace to little
25		1	12	26.0	11.7	clay

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
10/8/91			10.0	12.0	8.0

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	30.0
ROCK CORED (LIN FT)	--
SAMPLES	9s

BORING NO. SA-B-05

SA-MW-05

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. SA-B-05
FILE NO. 90358-40
SHEET NO. 2 of 2

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
25		2			25.0	
		2				
		1	S8	26.0		Same as S7, varies to silty clay
		1	15	28.0		
		1				-GLACIOLACUSTRINE-
		1				
		2	S9	28.0		Soft gray varved silty CLAY
		2	18	30.0		
		1				
30		2			6.7	
					30.0	Bottom of Exploration at 30.0 ft.
35						
40						
45						
50						
55						
60						

BORING NO. SA-B-05

SK-MW-01

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WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
119 TURNKEY STREET, OLD ORCHARD BEACH, MA 01833
(508) 937-6400

Page 1 of 3
Boring/Well No.: CW-1
Westinghouse Job #:
Well Elevation: 51.22
Drill Foreman:
Westinghouse Geologist: DUFFIN
Start Date: 2-19-90
End Date: 2-20-90

Project Name: SITE ASSESSMENT
Client Name: U.T.C.
Boring Location: CW-1
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER
Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
2.5								Fine Sand (~90% fine sand; 10% medium sand), subrounded – subangular, well sorted, loose, moist, dark brown (7.5 YR/3/4), dominantly quartz grains with ~2% mafics and heavy minerals, soil formed in fluvial sand.
5.0	1	5–7	7–10–13–17		24			5.0
7.5								Medium Sand (~70% medium; ~30% coarse sand), subrounded – subangular, well to moderately sorted, loose, wet, dark brown (7.5 YR/3/4), dominantly quartz grains with < 10% mafics and heavy minerals, fluvial sand.
10.0	2	10–12	11–8–7–11		24			10.0
12.5								Medium – Coarse Sand (~80% medium–coarse sand; 8% very coarse sand; 2% granular sand), subrounded – subangular, moderately sorted, loose, wet, dark brown (7.5 YR/3/4), dominantly quartz grains with ~15% mafics and heavy minerals, fluvial sand.
15.0	3	15–17	5–5–5–6		24			15.0
17.5								Slightly coarser sand than above.
20.0	4	20–22	2" TUBE		24			16.0
22.5								Clay, wet, cohesive, finely laminated, [grayish to dark grayish brown (10 YR/4–5/2) < 1 cm thick laminations alternate with weak red (10 R/4/4) laminations], laminations are as fine as < 1 mm, lacustrine clay.

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 – 4	v. loose	< 2	v. soft
4 – 10	loose	2 – 4	soft
10 – 30	m. dense	4 – 8	m. stiff
30 – 50	dense	8 – 15	stiff
> 50	v. dense	15 – 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:
Pumped grout from bottom to top of hole.
No well installed.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
2-19-90		5.5'	51.22	

WESTINGHOUSE BORING NUMBER: CW-1

Westinghouse form "BL/P1 Rev. 1 8/1/89

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SK-MW-01

WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TURNPIKE STREET, GEORGETOWN, MA 01833
(508) 352-6432

Page	2 of 3
Boring/Well No.:	CW-1
Westinghouse Job #:	
Well Elevation:	51.22
Drill Foreman:	
Westinghouse Geologist:	DUFFIN
Start Date:	2-19-90
End Date:	2-20-90

Project Name: SITE ASSESSMENT
Client Name: UTC
Boring Location: CW-1
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER — Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
25.0	5	25-27	WOR		24			
27.5								
30.0	6	30-32	0-0-0-1		24			
32.5								Lacustrine clay - continued
35.0	7	35-37	0-0-2-2		24			
37.5								
40.0	8	40-42	0-1-2-4		24			
42.5								
45.0	9	45-47	0-0-3-4		24			

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:
Pumped grout from bottom to top of hole.
No well installed.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
2-19-90		5.5'	51.22	

WESTINGHOUSE BORING NUMBER: CW-1

Westinghouse form "BL/P1 Rev. 1 8/1/89

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SK-MW-01

WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TENNEY STREET, GEORGETOWN, MA 01833
(508) 352-6492

Page	3 of 3
Boring/Well No.:	CW-1
Westinghouse Job #:	
Well Elevation:	51.22
Drill Foreman:	
Westinghouse Geologist:	DUFFIN
Start Date:	2-16-90
End Date:	2-20-90

Project Name: SITE ASSESSMENT
Client Name: U.T.C.
Boring Location: CW-1
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
47.5								Lacustrine clay – continued
50.0	10	50-52	0-0-2-3					
52.5								53.0
								Sand and rock fragments in a matrix of silt and clay (grains and rock fragments compose about 60%; clay and silt about 40%), wet, friable, dark reddish brown (5 YR/3/3), till
55.0	11	55-57	21-23-20-10					
57.5								Auger Refusal at 58.0'
60.0								T.D. = 58.0'

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 – 4	v. loose	< 2	v. soft
4 – 10	loose	2 – 4	soft
10 – 30	m. dense	4 – 8	m. stiff
30 – 50	dense	8 – 15	stiff
> 50	v. dense	15 – 30	v. stiff
		> 30	hard

GA/GC CHECKED BY:

NOTES:

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
2-19-90		5.5'	51.22	

WESTINGHOUSE BORING NUMBER CW-1

Westinghouse form "BL/P1 Rev. 1 8/1/89

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2118 1-0060

SK-MW-02

WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TENNEY STREET, GEORGETOWN, MA 01833
(508) 352-6492

Project Name	SITE ASSESSMENT
Client Name	U.T.C.
Boring Location:	CW-3
Drilling Contractor	C. WELTI ASSOC.
Drilling Method	HOLLOW STEM AUGER
Auger Size:	3.75" ID

Boring/Well No.:	CW-3
Westinghouse Job #:	
Well Elevation:	51.30
Drill Foreman:	
Westinghouse Geologist:	LANE
Start Date:	2-22-90
End Date:	2-22-90

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
0								Silty Sand with peat.
								2.0
2.5			AUGERED DOWN NO SPOON					
5.0	1	5-7	3-4-13-15		14			Fine Sand, subangular, moderately sorted, grey-brown, small pockets of orange stain.
7.5								
								10.0
10.0	2	10-12	9-8-8-11		20			Fine - Medium Sand, poorly sorted, wet, pinkish-brown, no odor
12.5								
15.0	3	15-15.5	7-8-8		20			Medium Sand, some coarse sand, wet, reddish brown.
17.5								
								20.0
20.0	4	20-21.5	1-2-2		4			Silt-clay, wet, reddish brown. T.D. = 21.5'
22.5								

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:
2" Well point at 18.0'
10.0' screen with .010" slots set at 19-9' depth.
10.0' riser; 1.0' stickup. Quartz sand pack from 19-7.5' depth.
Bentonite pellets from 7.5-5.5' depth. Backfilled (5.5-0').

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
2-22-90	2:30 PM	4.0'	51.30	

WESTINGHOUSE BORING NUMBER: CW-3

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118 TENNEY STREET, GEORGETOWN, MA 01833
(508) 352-6482

Page	1 of 1
Boring/Well No.:	CW-4
Westinghouse Job #:	
Well Elevation:	49.91'
Drill Foreman:	
Westinghouse Geologist:	GUFFIN
Start Date:	2-23-90
End Date:	2-23-90

Project Name: SITE ASSESSMENT
Client Name: U.T.C.
Boring Location: CW-4
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER — Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	1	0-2	1-0-2-3		12			Peat with roots.
								0.3
2.5								Silty Fine - Very Fine Sand (~80% sand; 20% silt and clay), subrounded - subangular, moderately-poorly sorted, loose, wet, brown (7.5 YR/4/4), grains are dominantly quartz, soil developed in fluvial sand.
								5.0
5.0	2	5-7	10-10-11-14		18			
7.5								Slightly coarser sand than above.
								10.0
10.0	3	10-12	5-3-6-10		24			Medium - Coarse Sand (~80% fine sand; ~20% very fine sand and silt), subrounded - subangular moderately-poorly sorted, loose, wet, dark grayish brown (10 YR/4/2), dominantly quartz grains with ~10% mafics and heavy minerals, cross-bedded, some orange hematite stained horizons, fluvial sand.
12.5								"Running" Sand at 15'.
15.0	4	15-17	3-3-3-4		8			
								16.8
17.5								Clay, wet, cohesive, dark grayish brown (2.5 Y/4/2).
20.0								T.D. = 17.0'

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:
2" Well point at 16.0'
10.0' screen with .010" slots set from 16-6' depth; 6.0' riser; 2.0' stickup
Quartz Sand Pack (16-4'); Bentonite pellets (4-2').

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
2-23-90	11:00 AM	2.0'	49.91	

WESTINGHOUSE BORING NUMBER: CW-4

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118 TENNEY STREET, GEORGETOWN, MA 01833
(508) 352-6482

Page: 1 of 2
Boring/Well No.: CW-5
Westinghouse Job #:
Well Elevation: 50.81
Drlr. Foreman:
Westinghouse Geologist: LANG
Start Date: 2-26-90
End Date: 2-27-90

Project Name: SITE ASSESSMENT
Client Name: U.T.C.
Boring Location: CW-5
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
2.5								Medium Sand, subrounded, moderately sorted, wet, reddish brown.
5.0	1	5-7	9-14-14-17		24			
7.5								
10.0	2	10-12	11-14-15-9		20			Reddish band at 11'.
12.5								
15.0	3	15-17						"Running" sand at 15'.
								18.0
17.5								Clay-silt, wet, cohesive, laminated, brown.
20.0	4	20-22	2-1-2-1		24			
22.5								

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:

No monitoring well installed.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
2-27-90		2.0'	50.81	

WESTINGHOUSE BORING NUMBER: CW-5

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118 TED NEY STREET, GEORGETOWN, MA 01833
(508) 352-6481

Page 2 of 2

Project Name:	SITE ASSESSMENT
Client Name:	U.T.C.
Boring Location:	CW-5
Drilling Contractor:	C. WELTI ASSOC.
Drilling Method:	HOLLOW STEM AUGER
Auger Size:	3.75" ID
Boring/Well No.:	CW-5
Westinghouse Job #:	
Ref. Elevation:	50.8'
Grid Ref.:	
Westinghouse Geologist:	LANG
Start Date:	2-26-90
End Date:	2-27-90

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer having 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace PID/FID Reading	Strata Change Depth	Field Classification and Drilling Information
	5	25–27	2" TUBE		24			
27.5								
30.0	8	30–32	3–2–2–2		24			
32.5								
35.0	7	35–37	1–2–3–3		24			Clay-silt unit – continued
37.5								
40.0	8	40–42	2–2–4–5		24			
42.5								
45.0	9	45–47	14–20–16–15		24			
47.5								46.8 Medium Sand with granules in a silty sand matrix, wet, well cemented, red-brown, till. Auger Refusal at 46.0'

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 – 4	v. loose	< 2	v. soft
4 – 10	loose	2 – 4	soft
10 – 30	m. dense	4 – 8	m. stiff
30 – 50	dense	8 – 15	stiff
> 50	v. dense	15 – 30	v. stiff
		> 30	hard

NOTES:

No monitoring well installed.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
2-27-90		2.0'	50.8'	

WESTINGHOUSE BORING NUMBER: CW-5

QA/QC CHECKED BY:

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WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TURNKEY STREET, GEORGETOWN, MA 01833
(508) 352-6492

Page: 1 of 2
Boring/Well No.: CAS-5
Westinghouse Job #:
Well Elevation: 47.80
Drill Foreman:
Westinghouse Geologist: DUFFIN
Start Date: 2-13-90
End Date: 2-13-90

Project Name: CAS
Client Name: U.T.C.
Boring Location: CAS-5
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	1	0–2	3–5–9–12		18			Peat, soil.
								0.4
1.0								Clayey Very Fine Sand–Silt, subangular, poorly sorted, loose, moist, very dark grayish brown (10 YR/4/2), soil developed in fluvial sand or fill (?).
2.0	2	2–4	10–20–20–18		13			Slightly coarser-grained than above.
3.0								
4.0	3	4–6	7–11–11–12		22			4.0
								Fine – Medium Sand, subangular – subrounded, moderately sorted, loose, wet, dark grayish brown (10 YR/4/2), grains are dominantly quartz with about 10%–15% mafics and heavy minerals, fluvial sand.
5.0								
6.0	4	6–8	11–13–10–10		24			
7.0								
8.0	5	8–10	3–8–10–10		24			8.0
								Medium – Coarse Sand, subangular – subrounded, moderately–well sorted, loose, wet, dark yellowish brown (10 YR/4/4), grains are dominantly quartz with about 7% mafics and heavy minerals, 2% pinkish K-feldspar (?), fluvial sand.
9.0								

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 – 4	v. loose	< 2	v. soft
4 – 10	loose	2 – 4	soft
10 – 30	m. dense	4 – 8	m. stiff
30 – 50	dense	8 – 15	stiff
> 50	v. dense	15 – 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:

2" Well Point at 11.0'
5.0' screen with .010" slots set at 11–6' depth.
8.0' riser. 2.0' stickup. Quartz sand pack from 11–5' depth.
Bentonite pellets from 5–3' depth. Backfilled 13–11'; 3.0–0' depth.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	1:00 PM	8.68'	47.80	

WESTINGHOUSE BORING NUMBER: CAS-5

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WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 [illegible] STREET, Greenfield, MA 01833
(413) 774-6411

Boring/Well No:	CAS-5
Westinghouse Job #:	2 6' 2
Well Elevation:	47.80
Drill Foreman:	
Westinghouse Geologist:	DUFFIN
Start Date:	2-13-90
End Date:	2-13-90

Project Name: CAS
Client Name: UTC
Boring Location: CAS-5
Drilling Contractor: C WELLS ASSOC
Drilling Method: HOLLOW STEM AUGER Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer faling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	6	10-12	4-5-6-7		24			
11.0								
12.0	7	12-13	12-12		24			11.9 Clay, wet, cohesive, finely laminated into varve sets (?): each varve set ranges from 1/2-1 cm thick: clay rich, grayish brown lamina (2.5 Y/5/2) alternate with silty, darker gray (5 Y/4/1) lamina, lacustrine clay-silt
13.0								T.D. = 13'

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:
2" Well Point at 11.0'
5.0' screen with .010" slots set at 11-6' depth.
6.0' riser, 2.0' stickup. Quartz sand pack from 11-5' depth.
Bentonite pellets from 5-3' depth. Backfilled 13-11': 3.0-0' depth.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	1:00 PM	8.68'	47.80	

WESTINGHOUSE BORING NUMBER: CAS-5

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WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TOWNEY STREET, GEORGETOWN, MA 01833
(508) 352-6442

Page: 1 of 2
Boring/Well No.: CAS-6
Westinghouse Job #:
Well Elevation: 48.80
Drill Forman:
Westinghouse Geologist: DUFFIN
Start Date: 2-14-90
End Date: 2-14-90

Project Name: CAS
Client Name: U.T.C.
Boring Location: CAS-6
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER
Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	1	0-2	2-2-2-4		0			No recovery, surficial material is fill (0-2').
2.0	2	2-4	6-28-43-28		18			Silty, Very Fine Sand, subangular - subrounded, poorly sorted, loose, moist, light olive brown (2.5 Y/5/4), fill or soil developed in fluvial sand.
							3.0	
								Medium Sand, subangular - subrounded, well sorted, loose, moist, yelowish red (5 YR/4/6); color appears to be due to hematite staining, grains are dominantly quartz with about 5% mafics and heavy minerals, fluvial sand.
4.0	3	4-6	11-14-17-13		20		4.0	Medium - Coarse Sand, subangular - subrounded, moderately sorted, loose, wet, brown (10 YR/4/3), grains are dominantly quartz with about 5% mafics and heavy minerals, fluvial sand.
6.0	4	6-8	9-10-11-12		24			Fine - Medium Sand; similar to above.
8.0	5	8-10	5-6-7-8		24			Fine Sand; similar to above.

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:

2" Well Point at 12.0'
5.0' screen with .010" slots set at 12-7' depth.
9.0' riser. 2.0' stickup. Quartz sand pack from 12-6' depth.
Bentonite pellets from 5-3' depth. Backfilled 3-0' depth.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	1:00 PM	6.68'	48.80	

WESTINGHOUSE BORING NUMBER: CAS-6

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118 TURNEY STREET, GEORGETOWN, MA 01833
(508) 352-6462

Page	2 of 2
Boring/Well No.:	CAS-6
Westinghouse Job #:	
Well Elevation:	48.80
Drill Foreman:	
Westinghouse Geologist:	DUFFIN
Start Date:	2-14-90
End Date:	2-14-90

Project Name: CAS
Client Name: U.T.C.
Boring Location: CAS-6
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER — Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From - To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
								Fine - Medium Sand; similar to above.
11.0								
12.0								
13.0							13.0	Clay, wet, cohesive, finely laminated into varve sets (?); each set is about 1/2 cm thick and consists of a darker (5 Y/4/1), siltier layer about 3 mm thick and a clay rich lamina (2.5 Y/5/2) about 2 mm thick, lacustrine clay-silt.
14.0								T.D. = 15'
15.0								

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:

2" Well Point at 12.0'
5.0' screen with .010" slots set at 12-7' depth.
9.0' riser, 2.0' stickup. Quartz sand pack from 12-5' depth.
Bentonite pellets from 5-3' depth. Backfilled 3-0' depth.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	1:00 PM	6.88'	48.80	

WESTINGHOUSE BORING NUMBER: CAS-6

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WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TURNPIKE STREET, GEORGETOWN, MA 01833
(508) 352-6492

Page	1 of 2
Boring/Well No.:	CAS-9
Westinghouse Job #:	
Ref. Elevation:	52.19
Ref. Datum:	
Westinghouse Geologist:	DUFFIN
Start Date:	2-15-90
End Date:	2-15-90

Project Name: CAS
Client Name: U.T.C.
Boring Location: CAS-9
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	1	0-2	3-8-15-16		24			Clayey Sand, roots, soil developed in a fluvial sand.
1.0								
2.0	2	2-4	17-19-25-23		24			2.0 — Fine - Medium Sand (clay and silt compose about 15% of sample), subangular - subrounded, moderately sorted, loose, moist, dark yellowish brown (10 YR/4/6), grains are dominantly quartz, fluvial sand.
3.0								
4.0	3	4-6	8-18-20-20					
5.0								
6.0	4	6-8	18-25-28-25					
7.0								
8.0	5	8-10	8-10-12-14		20			Slightly coarser grained than sample above.
								8.5 — Very Fine Sand, subangular - subrounded, moderately sorted, loose, wet, very dark grayish brown (10 YR/3/2), grains of quartz compose about 80%, mafics and heavy minerals about 20%, fluvial sand (?).
9.0								

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:
2" Well Point at 12.0'.
5.0' screen with .010" slots set at 13-8' depth.
9.0' riser, 2.0' stickup. Quartz sand pack from 13-6' depth.
Bentonite pellets from 6-4' depth. Backfilled 14-13'; 4.0-0'.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	5:00 PM	8.52'	52.19	

WESTINGHOUSE BORING NUMBER: CAS-9

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118 TENNEY STREET, GEORGETOWN, MA 01833
(508) 352-6482

Page 2 of 2
Boring/Well No: CAS-9
Westinghouse Job #:
Well Elevation: 52.19
Drill Foreman:
Westinghouse Geologist: DUFFIN
Start Date: 2-15-90
End Date: 2-15-90

Project Name: CAS
Client Name: U.T.C.
Boring Location: CAS-9
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER
Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	6	10-12	5-8-12-12		24			Fine - Medium Sand, subangular - subrounded, moderately sorted, loose, wet, brown (7.5 YR/4/2), grains are dominantly quartz with about 10% mafics and heavy minerals, fluvial sand.
11.0								
12.0	7	12-14	3-3-7-5					
								12.5 Coarse - Very Coarse Sand (~5% granules), subangular - subrounded, moderately-well sorted, loose, wet, (10 YR/4/2), grains are dominantly quartz with about 10% mafics and heavy minerals and 5% rock fragments, fluvial sand. 13.2
13.0								
14.0								Clay, wet, cohesive, finely laminated into varves (?); a varve set is about 8 mm thick and consists of a silter-rich, dark gray laminae (5 Y/4/1) 4 mm thick lamina overlain by a clay-rich, 4 mm thick, grayish brown (2.5 Y/5/2) lamina, lacustrine clay-silt.
								T.D. = 14'

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:

2" Well Point at 12.0'
5.0' screen with .010" slots set at 13-8' depth.
9.0' riser, 2.0' stickup. Quart: sand pack from 13-8' depth.
Bentonite pellets from 8-4' depth. Backfilled 14-13'; 4.0-0'.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	5:00 PM	8.52'	52.19	

WESTINGHOUSE BORING NUMBER: CAS-9

Westinghouse form "BL/P1 Rev. 1 8/1/88

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WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TURNPIKE STREET, CANTON, MA 02021
(508) 352-6452

Page: 1 of 2
Boring/Well No.: CAS-10A
Westinghouse Job #:
Well Elevation: 43.43
Drill Foreman:
Westinghouse Geologist: DUFFIN
Start Date: 2-16-90
End Date: 2-16-90

Project Name: CAS
Client Name: U.T.C.
Boring Location: CAS-10A
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From | To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	1	0-2	2-7-13-15		22			
1.0								Clayey Sand, fill.
2.0	2	2-4	18-20-21-20		16			2.0 Fine - Medium Sand, subangular - subrounded, well-sorted, loose, moist, dark grayish brown (10 YR/4/2), grains are dominantly quartz with about 10% mafics and heavy minerals. Buried sand.
3.0								
4.0	3	4-6	7-10-14-12		20			Medium Sand; similar to above.
5.0								
6.0	4	6-8	12-16-17-18		20			Same as above except sample is wet.
7.0								
8.0	5	8-10	4-9-10-11		24			Slightly coarser; intense hematite staining that shows a reddish yellow (7.5 YR/6/8) stain on yellowish brown (10 YR/5/8) sand.
9.0								

GRANULAR SOILS Blows/Ft	Density	COHESIVE SOILS Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:
2" Well Point at 12.5'
5.0' screen with .010" slots set at 12.5-7.5' depth.
7.5' riser. 2.0' stickup. Quartz sand pack from 12.5-5.5' depth.
Bentonite pellets from 5.5-3.5' depth. Backfilled 14-12.5'; 3.5-0'.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	2:30 PM	5.98'	43.43	

WESTINGHOUSE BORING NUMBER: CAS-10A

Westinghouse form "BL/P1 Rev. 1 8/1/88

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SK-MW-08S

CONFIDENTIAL

2118 1 00 7 09

WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TENNEY STREET, GEORGETOWN, MA 01833
(508) 352-6432

Boring/Well No.: CAS-10A
Westinghouse Job #:
Well Elevation: 43.43
Drlg. Foreman:
Westinghouse Geologist: DUFFY
Start Date: 2-16-90
End Date: 2-18-90

Project Name: CAS
Client Name: UTC
Boring Location: CAS-10A
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER
Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
	8	10-12	3-8-13-20		24			Same as above but lacks intense hematite staining.
11.0								
								12.0
12.0	7	12-14	4-4-5-5					Coarse Sand, subangular - subrounded, moderately sorted, loose, wet, yellowish red (5 YR/4/6) hematite staining, grains are dominantly quartz with about 5% mafics and heavy minerals and 5% rock fragments, fluvial sand.
								13.0
13.0								Clay, wet, cohesive, finely laminated (varves not very distinct), olive gray (5 Y/4/2), lacustrine clay-silt.
14.0								T.D. = 14'

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:

2" Well Point at 12.5'.
5.0' screen with .010" slots set at 12.5-7.5' depth.
7.5' riser. 2.0' stickup. Quartz sand pack from 12.5-6.5' depth.
Bentonite pellets from 5.5-3.5' depth. Backfilled 14-12.5'; 3.5-0'.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90	2:30 PM	5.69'	43.43	

WESTINGHOUSE BORING NUMBER: CAS-10A

Westinghouse form "BL/P1 Rev. 1 8/1/89

SK-MW-08D

WESTINGHOUSE ENVIRONMENTAL & GEOTECHNICAL SERVICES, INC.
118 TENNEY STREET, GEORGETOWN, MA 01833
(508) 352-6492

Page	1 of 1
Boring/Well No.:	CAS-10B
Westinghouse Job #:	
MSL Elevation:	45.21
Drill Foreman:	
Westinghouse Geologist:	DUFFIN
Start Date:	2-23-90
End Date:	2-28-90

Project Name: CAS
Client Name: U.T.C.
Boring Location: CAS-10B
Drilling Contractor: C. WELTI ASSOC.
Drilling Method: HOLLOW STEM AUGER Auger Size: 3.75" ID

Sampler: Unless noted, sampler consists of a 2" split-spoon driven using a 140 lb. hammer falling 30 in.

DEPTH (FT)	SAMPLE Type & No.	SAMPLE Range From / To	Standard Penetration Test Blows per 6" on split-spoon	Pen (in)	Rec (in)	Headspace HNU Reading	Strata Change Depth	Field Classification and Drilling Information
10.0								
20.0	1	18-20	1-0-1-1		24			Clay, wet, cohesive, finely laminated, dark grey (5 Y/4/2) lacustrine clay-silt.
30.0								
40.0	1	50-52	1-1-1-2		24			Similar to above sample.
50.0								
60.0								T.D. = 61'

On 2/23/90 drilled to 20' with 13" O.D. (8" I.D.) H.S.A. Installed 6" diameter steel pipe at 18' and pressure grouted in place.

On 2/28/90 drilled through grout to 60'. Installed well at 59'.

GRANULAR SOILS		COHESIVE SOILS	
Blows/Ft	Density	Blows/Ft	Density
0 - 4	v. loose	< 2	v. soft
4 - 10	loose	2 - 4	soft
10 - 30	m. dense	4 - 8	m. stiff
30 - 50	dense	8 - 15	stiff
> 50	v. dense	15 - 30	v. stiff
		> 30	hard

QA/QC CHECKED BY:

NOTES:

2" Well Point at 58.0'
10.0' screen with .010" slots set at 58-48' depth
49' riser, 2.0' stickup. Quartz sand pack from 58-38' depth.
Bentonite-Cement Grout from 38-0' depth.

GROUNDWATER READINGS

DATE	TIME	WATER AT	CASING AT	STABILIZATION
3-7-90		8.78'	45.21	

WESTINGHOUSE BORING NUMBER
CAS-10B

Westinghouse form "BL/P1 Rev. 1 8/1/89

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2118 1 0 0 0

SK-MW-09

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. SK-MW-09

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 2
LOCATION N 146,767
E 186,692

ELEVATION 62.5
DATUM MDC/NGVD
START 3 October 1991
FINISH 4 October 1991
DRILLER B. Ursin
H & A REP C. Osgood

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	--	RIG TYPE CME75
INSIDE DIAMETER (IN)	3-3/4	1-3/8	--	BIT TYPE --
HAMMER WEIGHT (LB)	--	140	-	DRILL MUD --
HAMMER FALL (IN)	--	30	-	OTHER

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0						
		2	S1	1.0		Loose brown fine SAND, trace roots
		2	24	3.0		
		2				
		5				-STREAM TERRACE DEPOSITS-
					57.5	
5		2	S2	5.0	5.0	Loose red brown fine SAND, little silt, indistinct stratification
		3	24	7.0		-STREAM TERRACE DEPOSITS-
		4				
		5			55.5	
					7.0	
10		2	S3	10.0		Loose brown fine SAND, little medium sand, indistinct stratification
		3	12	12.0		
		3				
		2	S4	12.0		Loose brown medium to fine SAND, indistinct stratification
		4	11	14.0		-STREAM TERRACE DEPOSITS-
		3				
		7			48.5	
		2	S5	14.0	14.0	Very loose brown medium to fine SAND, little coarse sand, trace fine gravel
15		1	20	16.0		-STREAM TERRACE DEPOSITS-
		2				
		3			46.5	
		2	S6	16.0	16.0	Very loose brown medium SAND, trace fine sand
		1	10	18.0		
		1				
		1				
		2	S7	18.0		Loose brown medium SAND, trace fine sand
		2	6	20.0		
		6				
20		5				
		1	S8	20.0		Loose brown medium SAND, trace fine sand and coarse sand
		2	10	22.0		
		3				
		4				-STREAM TERRACE DEPOSITS-
						Note: Augers sank, splitspoon stuck in augers due to running sand condition.
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
10/3/91	1300		10.0	10.0	7.5
10/4/91	0745		22.0	17.7	7.1

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	29.0
ROCK CORED (LIN FT)	--
SAMPLES	10s

BORING NO. SK-MW-09

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. SK-MW-09
FILE NO. 90358-40
SHEET NO. 2 of 2

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
25		5	S9	25.0		
		5	2	27.0	36.5	
		22			26.0	Dense red brown silty medium to fine SAND, trace coarse sand, and fine gravel
		17				Medium dense red brown silty fine SAND, little fine gravel, trace coarse to medium sand
		27	S10	27.0		-GLACIAL TILL-
		8	6	29.0		
		9				
		15			33.5	
					29.0	Auger Refusal on Probable Bedrock at 29.0 ft.
30						
35						
40						
45						
50						
55						
60						

SK-mw-10

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. **SK-B-10**

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 2
LOCATION N 145,509
E 186,236

ELEVATION 53.9
DATUM MDC/NGVD
START 8 October 1991
FINISH 9 October 1991
DRILLER K. Christiana
H & A REP C. Osgood

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	--	RIG TYPE MOBIL B53
INSIDE DIAMETER (IN)	3-3/4	1-3/8	--	BIT TYPE --
HAMMER WEIGHT (LB)	--	140	-	DRILL MUD --
HAMMER FALL (IN)	--	30	-	OTHER

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0					53.4	
					0.5	Visible in borehole: brown silty fine SAND, little loam, roots
						-FOREST MAT-
		3	S1	1.0		
		4	20	3.0		Loose red brown fine SAND, trace silt
		4				
		5				
5		6	S2	5.0		Medium dense red-brown fine SAND, little medium sand, trace silt in single 1/2 in. seam
		7	20	7.0		
		6				
		7				
						-STREAM TERRACE DEPOSITS-
10		7	S3	10.0		Medium dense red-brown medium to fine SAND, trace coarse sand, silt in single 1/2 in. seam
		8	18	12.0		
		7				
		10				
15		4	S4	15.0		Loose, gray-brown medium to fine SAND
		4	15	17.0		
		5				
		4				
20		8	S5	20.0		Medium dense brown medium to fine SAND, trace coarse sand
		7	12	22.0		
		8				
		9				
						-STREAM TERRACE DEPOSITS-
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
10/8/91	1430	25.0	21.3	11.1	
10/9/91	0900	28.0	29.0	8.6	
10/9/91	1100	15.0	15.0	8.1	

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	29.0
ROCK CORED (LIN FT)	--
SAMPLES	7s

BORING NO. **SK-B-10**

SK-MW-10

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. SK-B-10
FILE NO. 90358-60
SHEET NO. 2 of 2

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
25		12	S6	25.0		Medium dense red-brown medium to fine SAND
		12	4	27.0		
		8				
		6				
		11	S7	27.0		
		12	10	28.5	25.9	
		50			28.0	
					24.9	No Recovery - possible Glacial Till or Decomposed Bedrock
30					29.0	Refusal at 29.0 ft.
35						
40						
45						
50						
55						
60						

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. SK-MW-11

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 1
LOCATION N 146,081
E 185,100

ELEVATION 48.1 SK-MW-11
DATUM MDC/NGVD
START 7 October 1991
FINISH 7 October 1991
DRILLER K. Christiana
H & A REP S. Gleason

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	--	RIG TYPE MOBIL B53
INSIDE DIAMETER (IN)	3-3/4	1-3/8	--	BIT TYPE --
HAMMER WEIGHT (LB)	--	140	-	DRILL MUD --
HAMMER FALL (IN)	--	30	-	OTHER SK-MW-11

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0						
		4	S1	1.0	46.6	Silty fine SAND -FILL-
		4	20	3.0	1.5	Organic SILT
		6				-ALLUVIUM-
		4			45.1	
					3.0	
5		11	S2	5.0		Medium to fine SAND
		10	21	7.0		
		9				
		11				
10		6	S3	10.0		-STREAM TERRACE DEPOSITS-
		7	24	12.0		
		7				
		6				
		5	S4	12.0		
		8	24	14.0		
		7				
		7				
					33.1	
15		3	S5	15.0	15.0	Varved CLAY
		3	24	17.0		
		5				-GLACIOLACUSTRINE-
		4				
		4	S6	17.0		
		4	12	19.0		
		3				
		3			29.1	
					19.0	Bottom of Exploration at 19.0 ft.
20						
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
10/7/91			15.0	19.0	6.2

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	19.0
ROCK CORED (LIN FT)	--
SAMPLES	6s

BORING NO. SK-MW-11

SK - MW - 12

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. SK-MW-12

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 1
LOCATION N 146,773
E 184,585

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	--	RIG TYPE CME75
INSIDE DIAMETER (IN)	3-3/4	1-3/8	--	BIT TYPE --
HAMMER WEIGHT (LB)	--	140	-	DRILL MUD --
HAMMER FALL (IN)	--	30	-	OTHER SK-MW-12

ELEVATION 46.3 SK-MW-12
DATUM MDC/NGVD
START 2 October 1991
FINISH 2 October 1991
DRILLER B. Ursin
H & A REP C. Osgood

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0					46.1	-ASPHALT-
					0.2	-FILL-
		5	S1	1.0	45.3	
		4	19	3.0	1.0	
		3				
		3				
						Medium to fine SAND
5		4	S2	5.0		
		4	24	7.0		
		4				
		6				
						-STREAM TERRACE DEPOSITS-
10		3	S3	10.0		
		3	24	12.0		
		3				
		4				
					31.8	
					14.5	
15		1	S4	15.0		Laminated silty CLAY
		1	18	17.0		
		2				
		1				
		1	S5	17.0		
		2	6	19.0		
		1				-GLACIOLACUSTRINE-
		1				
		1	S6	19.0		
20		WOH	4	21.0		
		1				
		WOH			25.3	
					21.0	Bottom of Exploration at 21.0 ft.
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
10/2/91	1500		14.5	14.5	6.3
10/2/91	1630		14.5	14.5	6.1
10/3/91	0800		14.5	14.5	6.1

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	21.0
ROCK CORED (LIN FT)	--
SAMPLES	6s

BORING NO. SK-MW-12

SK-MW-13

HALEY & ALDRICH, INC.
GLASTONBURY
CONNECTICUT

TEST BORING REPORT

BORING NO. SK-MW-13

PROJECT SITE-WIDE ENVIRONMENTAL MONITORING PROGRAM EAST HARTFORD, CONNECTICUT
CLIENT PRATT & WHITNEY AIRCRAFT
CONTRACTOR CLARENCE WELTI ASSOCIATES, INC.

FILE NO. 90358-40
SHEET NO. 1 of 1
LOCATION N 144,541
E 184,869

ITEM	CASING	DRIVE SAMPLER	CORE BARREL	DRILLING EQUIPMENT & PROCEDURES
TYPE	HSA	SS	--	RIG TYPE MOBIL B53
INSIDE DIAMETER (IN)	3-3/4	1-3/8	--	BIT TYPE --
HAMMER WEIGHT (LB)	--	140	-	DRILL MUD --
HAMMER FALL (IN)	--	30	-	OTHER SK-MW-13

ELEVATION 41.4 SK-MW-13
DATUM MDC/NGVD
START 7 October 1991
FINISH 7 October 1991
DRILLER K. Christiana
H & A REP S. Gleason

DEPTH (FT)	CASING BLOWS PER FT	SAMPLER BLOWS PER 6 IN	SAMPLE NO.& REC. (IN)	SAMPLE DEPTH (FT)	ELEV./ DEPTH (FT)	VISUAL DESCRIPTION AND REMARKS
0		7	S1	1.0		Loose brown medium to fine SAND
		4	15	3.0		
		4				
		6				
5		3	S2	5.0		No recovery - 2 tries
		4	12	7.0		(3rd try) same as S1, varies to fine SAND
		4				
		5				-STREAM TERRACE DEPOSITS-
10		WOH	S3	10.0		Very loose brown fine SAND, varies to coarse
		WOH	12	12.0		to fine SAND
		4				
		4				
		2		13.0		No recovery-2 tries
		2		15.0		
		3				
		3			26.4	
15		1	S4	15.0	15.0	Very soft gray laminated silty CLAY.
		1	3	17.0		
		1				-GLACIOLACUSTRINE-
		1				
		P	S5	17.0		Same as S4, with partings of red fine SAND
		U	24	19.0		
		S				
		H			22.4	
					19.0	Bottom of Exploration at 19.0 ft.
20						Note: Observation well installed at 12.0 ft.
25						

WATER LEVEL DATA

DATE	TIME	ELAPSED TIME (HR)	DEPTH (FT) TO: BOTTOM OF CASING	BOTTOM OF HOLE	WATER
					6.2

SAMPLE IDENTIFICATION

O OPEN END ROD
T THIN WALL TUBE
U UNDISTURBED SAMPLE
S SPLIT SPOON

SUMMARY

OVERBURDEN (LIN FT)	19.0
ROCK CORED (LIN FT)	--
SAMPLES	5S

BORING NO. SK-MW-13

GEOLOGIC BORING LOG

Project: South Klondike Monitoring Well Install.
LEA Comm No: 68TR672
Client: Pratt & Whitney
Location: East Hartford, Connecticut

Start Date 8/27/96
End Date 8/27/96

Boring ID SK-MW-19

Drilling Contractor: Environ. Drilling Inc.
Drilling Method: Hollow stem auger
Sampling Method: Split spoon
Groundwater Observations:
Depth: 8 **At:** 0 **Hours**
Depth: **At:** **Hours**

Logged By: F. Postma
Drilling Foreman: Dwayne
Drill Rig: D120
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesive	PID/FID (ppm)
0	1017691	25	10,11,10,9	Pink, fine SAND, some medium Sand, little coarse Gravel, dry, loose to moderately dense	0.0
	1017692	0	14,15,21,23	No recovery	
4	1017693	20	17,19,29,27	Pink, medium SAND, some fine Sand, loose, moist, stratified	0.0
	1017694	100	27,24,37,35	As above, fine SAND lense	0.0
8 ▽	1017695	70	20,6,5,7	Grey to dark brown, fine SAND, loose, wet, stratified, gleyed	0.0
	1017696	50	4,5,2,5	Pink to olive brown, medium SAND, some fine Sand, trace coarse Sand, loose, wet	0.0
12	1017697	80	7,10,9,10	Yellowish brown to yellowish red, medium SAND, little fine Sand, loose, wet	0.0
	1017698		3,2,2,3	Grey, SILT, little Clay, wet, loose; red fine SAND lenses at 14.2', 14.9', 15.6'	0.0
16				Bottom of boring 16'	
20					

Comments:

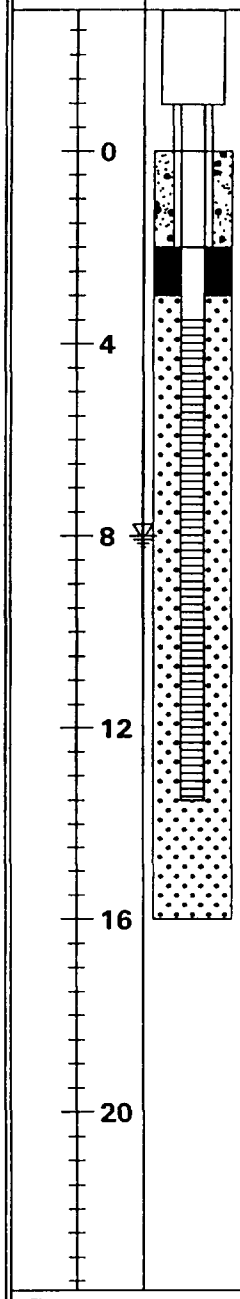
Boring No: SK-MW-19

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

MONITORING WELL COMPLETION LOG

Project: South Klondike Monitoring Well Install. **LEA Comm No:** 68TR672 **Client:** Pratt & Whitney **Location:** East Hartford, Connecticut	**Start Date:** 8/27/96 **End Date** 8/27/96	**Boring ID** **SK-MW-19**

Drilling Contractor: Environ. Drilling Inc. **Logged By:** F. Postma
Drilling Method: Hollow stem auger **Drilling Foreman:** Dwayne
Sampling Method: Split spoon **Drill Rig:** D120
Groundwater Observations: **Surface Elevation:**
Depth: 8 **At:** 0 **Hours** **Northing:**
Depth: **At:** **Hours** **Easting:**



Elev./ Depth (Ft).	Well Construction Diagram	Sample Description Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesiveness
0		Pink, fine SAND, some medium Sand, little coarse Gravel, dry, loose to moderately dense
		No recovery
4		Pink, medium SAND, some fine Sand, loose, moist, stratified
		As above, fine SAND lense
8		Grey to dark brown, fine SAND, loose, wet, stratified, gleyed
		Pink to olive brown, medium SAND, some fine Sand, trace coarse Sand, loose, wet
12		Yellowish brown to yellowish red, medium SAND, little fine Sand, loose, wet
		Grey, SILT, little Clay, wet, loose; red fine SAND lenses at 14.2', 14.9', 15.6'
16		Bottom of boring 16'
20		

COVER
TYPE: Stick up

BACKFILL
Type: N/A
Top Depth:
Bottom Depth:

CASING
Diameter: 2"
Length: 6.5'
Stick Up: 2.9'

SEAL
Type: Bentonite Chips
Quantity: .5 bags
Top Depth: 2'
Bottom Depth: 3'

SCREEN
Type: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
Top Depth: 3.5'
Bottom Depth: 13.5'

FILTER PACK
Type: #0 Sand
Top Depth: 3'
Bottom Depth: 16'

Comments:

Boring No: SK-MW-19

LEA
LOUREIRO ENGINEERING ASSOCIATES,PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (203)747-6181 Fax (203)747-8822

GEOLOGIC BORING LOG

Project: South Klondike Monitoring Well Install. **LEA Comm No:** 68TR672 **Client:** Pratt & Whitney **Location:** East Hartford, Connecticut	**Start Date** 8/27/96 **End Date** 8/27/96	**Boring ID** **SK-MW-20**

Drilling Contractor: Environ. Drilling Inc.
Drilling Method: Hollow stem auger
Sampling Method: Split spoon
Groundwater Observations:
Depth: 7.7 **At:** 0 **Hours** ▽
Depth: **At:** **Hours** ▼

Logged By: F. Postma
Drilling Foreman: Dwayne
Drill Rig: D120
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesive	PID/FID (ppm)
0	1017682	50	3,6,6,4	Top 6": Dark brown to strong brown, fine SAND, trace(-) Silt, loose, moist, fibric Organic Material; Bottom 6": Yellowish red, fine SAND, trace Silt, loose, moist	0.0
	1017683	60	5,7,7,10	Pink, fine SAND, trace(+) Silt, loose, moist, stratified (poorly)	0.0
4	1017684	60	4,7,10,15	As above, SILT lense at 5.2 (0.1' thick)	0.0
	1017685	100	7,10,13,10	Top 1.6': As above; Bottom 0.4': Yellowish red, medium SAND, some fine Sand, loose, moist to wet, mottles	0.0
▽ 8	1017686 1017689	85	10,8,7,5	Top 6": Pink, fine SAND, little Silt, loose to moderately dense, moist to wet; Bottom 1': Reddish yellow, medium SAND, little fine Sand, loose, wet, stratified	0.0
	1017687	70	3,3,4,4	As above	0.0
12	1017688	75	7,9,9,6	Top 1': As above; Bottom 6": Pale yellowish brown to dark brown, medium SAND, some fine Sand, little coarse Sand, loose, wet, manganese staining	0.0
	1017690	100	4,4,5,6	Top 1': As above; Bottom 1': Grey, SILT, same Clay, loose, wet, stratified, red fine SAND lenses at 15.4', 15.6'	0.0
16				Bottom of boring at 16'	
20					

Comments:

Boring No: SK-MW-20

LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

MONITORING WELL COMPLETION LOG

Project: South Klondike Monitoring Well Install. **LEA Comm No:** 68TR672 **Client:** Pratt & Whitney **Location:** East Hartford, Connecticut	**Start Date:** 8/27/96 **End Date** 8/27/96	**Boring ID** **SK-MW-20**

Drilling Contractor: Environ. Drilling Inc.
Drilling Method: Hollow stem auger
Sampling Method: Split spoon
Groundwater Observations:
Depth: 7.7 **At:** 0 **Hours**
Depth: **At:** **Hours**

Logged By: F. Postma
Drilling Foreman: Dwayne
Drill Rig: D120
Surface Elevation:
Northing:
Easting:

Elev./ Depth (Ft).	Well Construction Diagram	Sample Description Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesiveness
0		Top 6": Dark brown to strong brown, fine SAND, trace(-) Silt, loose, moist, fibric Organic Material; Bottom 6": Yellowish red, fine SAND, trace Silt, loose, moist
		Pink, fine SAND, trace(+) Silt, loose, moist, stratified (poorly)
4		As above, SILT lense at 5.2 (0.1' thick)
		Top 1.6': As above; Bottom 0.4': Yellowish red, medium SAND, some fine Sand, loose, moist to wet, mottles
8		Top 6": Pink, fine SAND, little Silt, loose to moderately dense, moist to wet; Bottom 1': Reddish yellow, medium SAND, little fine Sand, loose, wet, stratified
		As above
12		Top 1': As above; Bottom 6": Pale yellowish brown to dark brown, medium SAND, some fine Sand, little coarse Sand, loose, wet, manganese staining
		Top 1': As above; Bottom 1': Grey, SILT, same Clay, loose, wet, stratified, red fine SAND lenses at 15.4', 15.6'
16		Bottom of boring at 16'
20		

COVER
TYPE: Stick up

BACKFILL
Type: N/A
Top Depth:
Bottom Depth:

CASING
Diameter: 2"
Length: 7'
Stick Up: 3.0'

SEAL
Type: Bentonite Chips
Quantity: .5 bags
Top Depth: 2'
Bottom Depth: 3'

SCREEN
Type: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
Top Depth: 4'
Bottom Depth: 14'

FILTER PACK
Type: #0 Sand
Top Depth: 3'
Bottom Depth: 14.5'

Comments:

Boring No: SK-MW-20

LOUREIRO ENGINEERING ASSOCIATES,PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (203)747-6181 Fax (203)747-8822

GEOLOGIC BORING LOG

Project: South Klondike Monitoring Well Install. **LEA Comm No:** 68TR672 **Client:** Pratt & Whitney **Location:** East Hartford, Connecticut	**Start Date** 8/27/96 **End Date** 8/27/96	**Boring ID** **SK-MW-21**

Drilling Contractor: Environ. Drilling Inc.
Drilling Method: Hollow stem auger
Sampling Method: Split spoon
Groundwater Observations:
Depth: 7.5 **At:** 0 **Hours** ▽
Depth: **At:** **Hours** ▼

Logged By: F. Postma
Drilling Foreman: Dwayne
Drill Rig: D120
Surface Elevation:
Northing:
Easting:

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesive	PID/FID (ppm)
0	1017675	50	1,1,2,3	Top 6": Strong brown, fine SAND, trace Silt, loose to very loose, moist, fibric Organic Matter; Bottom 6": Pinkish yellow, fine SAND, trace(+) medium Sand, loose, moist, stratified	0.0
	1017676	80	5,7,9,10	As above	0.0
4	1017677	80	4,6,7,9	Yellowish red to pink, medium SAND, some fine Sand, loose, moist, stratified, mottles	0.0
	1017678	70	9,8,8,10	As above, possible manganese staining at 7.1', wet at 7.5'	0.0
8	1017679	90	5,5,7,6	Pinkish grey to yellowish red, medium SAND, little fine Sand, loose, wet	0.0
	1017680	95	7,4,3,3	Top 1.5': As above; Bottom 0.5': Yellowish red, medium SAND, some coarse Sand, loose, wet, mottles, stratified	0.0
12	1017681	80		Top 1.3': As above; Bottom 0.5': Grey, SILT, little Clay, moist to wet, stratified	0.0
				Bottom of boring 14'	
16					
20					

Comments:

Boring No: SK-MW-21

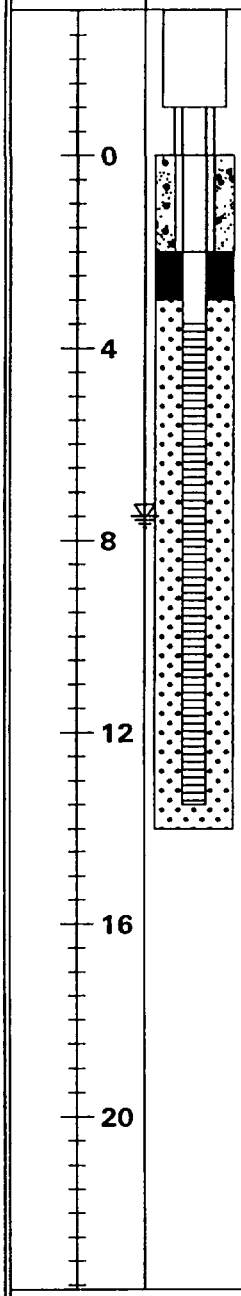
LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

MONITORING WELL COMPLETION LOG

Project: South Klondike Monitoring Well Install. **LEA Comm No:** 68TR672 **Client:** Pratt & Whitney **Location:** East Hartford, Connecticut	**Start Date:** 8/27/96 **End Date** 8/27/96	**Boring ID** **SK-MW-21**

Drilling Contractor: Environ. Drilling Inc.
Drilling Method: Hollow stem auger
Sampling Method: Split spoon
Groundwater Observations:
Depth: 7.5 **At:** 0 **Hours**
Depth: **At:** **Hours**

Logged By: F. Postma
Drilling Foreman: Dwayne
Drill Rig: D120
Surface Elevation:
Northing:
Easting:



Elev./ Depth (Ft).	Sample Description Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesiveness
0	Top 6": Strong brown, fine SAND, trace Silt, loose to very loose, moist, fibric Organic Matter; Bottom 6": Pinkish yellow, fine SAND, trace(+) medium Sand, loose, moist, stratified
4	As above
	Yellowish red to pink, medium SAND, some fine Sand, loose, moist, stratified, mottles
8	As above, possible manganese staining at 7.1', wet at 7.5'
	Pinkish grey to yellowish red, medium SAND, little fine Sand, loose, wet
12	Top 1.5': As above; Bottom 0.5': Yellowish red, medium SAND, some coarse Sand, loose, wet, mottles, stratified
	Top 1.3': As above; Bottom 0.5': Grey, SILT, little Clay, moist to wet, stratified
16	Bottom of boring 14'
20	

COVER
TYPE: Stick up

BACKFILL
Type: N/A
Top Depth:
Bottom Depth:

CASING
Diameter: 2"
Length: 6.5'
Stick Up: 3.0'

SEAL
Type: Bentonite Chips
Quantity: .5 bags
Top Depth: 2'
Bottom Depth: 3'

SCREEN
Type: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
Top Depth: 3.5'
Bottom Depth: 13.5'

FILTER PACK
Type: #0 Sand
Top Depth: 3'
Bottom Depth: 13.5'

Comments:

Boring No: SK-MW-21

LOUREIRO ENGINEERING ASSOCIATES,PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (203)747-6181 Fax (203)747-8822

GEOLOGIC BORING LOG

Project: South Klondike Monitoring Well Install. **LEA Comm No:** 68TR672 **Client:** Pratt & Whitney **Location:** East Hartford, Connecticut	**Start Date** 8/27/96 **End Date** 8/27/96	**Boring ID** **SK-MW-22**

Drilling Contractor: Environ. Drilling Inc. **Logged By:** F. Postma
Drilling Method: Hollow stem auger **Drilling Foreman:** Dwayne
Sampling Method: Split spoon **Drill Rig:** D120
Groundwater Observations: **Surface Elevation:**
Depth: 7 **At:** 0 **Hours** ▽ **Northing:**
Depth: **At:** **Hours** ▼ **Easting:**

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesive	PID/FID (ppm)
0	1017667	50	3,4,6,8	Top 6": Strong brown, fine SAND and SILT, loose, moist, fibric Organic Matter, roots; Bottom 6": Brownish pink, fine SAND, trace(-) medium Sand, loose, moist, stratified	0.0
	1017668	70	9,11,17,17	As above, SILT lense at 3.2' (0.1' thick)	0.0
4	1017669	80	7,12,14,16	Light pinkish brown, fine SAND, little medium Sand, moist, moderately dense, mottles at tip, stratified	0.0
▽	1017670	70	10,13,14,14	Top 6": Reddish yellow, medium SAND, with fine Sand, moderately dense, moist, mottles; Bottom 1": Greyish brown, medium SAND, with fine Sand, moderately dense, wet, oil staining	0.0
8	1017671	85	3,4,7,6	As above, oil staining at 9.2'	0.0
	1017672		5,5,6,7	As above	0.0
12	1017673		6,8,12,12	As above, iron staining at 13.1'	0.0
	1017674	100	3,3,3,5	Grey, SILT, little Clay, wet, stratified, fat CLAY lense at 14.7'	0.0
16				Bottom of boring at 16'	
20					

Comments:

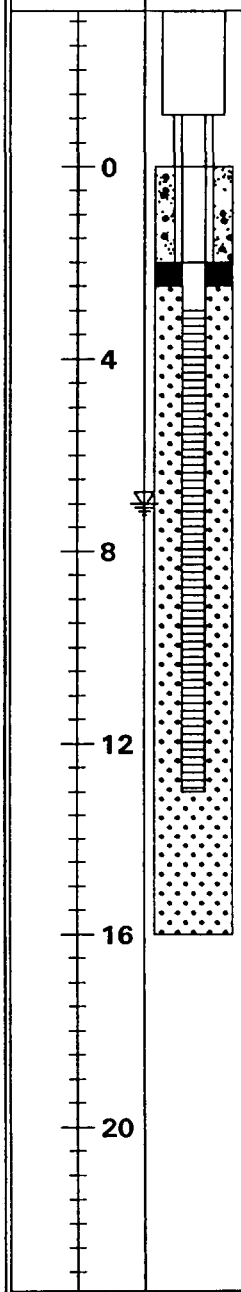
Boring No: SK-MW-22

LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

MONITORING WELL COMPLETION LOG

Project: South Klondike Monitoring Well Install. **LEA Comm No:** 68TR672 **Client:** Pratt & Whitney **Location:** East Hartford, Connecticut	**Start Date:** 8/27/96 **End Date** 8/27/96	**Boring ID** **SK-MW-22**

Drilling Contractor: Environ. Drilling Inc. **Logged By:** F. Postma
Drilling Method: Hollow stem auger **Drilling Foreman:** Dwayne
Sampling Method: Split spoon **Drill Rig:** D120
Groundwater Observations: **Surface Elevation:**
Depth: 7 **At:** 0 **Hours** **Northing:**
Depth: **At:** **Hours** **Easting:**



Elev./ Depth (Ft).	Sample Description (Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesiveness)
0	Top 6": Strong brown, fine SAND and SILT, loose, moist, fibric organic matter, roots; Bottom 6": Brownish pink, fine SAND, trace(-) medium Sand, loose, moist, stratified
	As above, SILT lense at 3.2' (0.1' thick)
4	Light pinkish brown, fine SAND, little medium Sand, moist, moderately dense, mottles at tip, stratified
	Top 6": Reddish yellow, medium SAND, with fine Sand, moderately dense, moist, mottles; Bottom 1': Greyish brown, medium SAND, with fine Sand, moderately dense, wet, oil staining
8	As above, oil staining at 9.2'
	As above
12	As above, iron staining at 13.1'
	Grey, SILT, little Clay, wet, stratified, fat CLAY lense at 14.7'
16	Bottom of boring at 16'
20	

COVER
TYPE: Stick up

BACKFILL
Type: N/A
Top Depth:
Bottom Depth:

CASING
Diameter: 2"
Length: 6'
Stick Up: 3.2'

SEAL
Type: Bentonite Chips
Quantity: .5 bags
Top Depth: 2'
Bottom Depth: 2.5'

SCREEN
Type: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
Top Depth: 3'
Bottom Depth: 13'

FILTER PACK
Type: #0 Sand
Top Depth: 2.5'
Bottom Depth: 14'

Comments:

Boring No: SK-MW-22

LOUREIRO ENGINEERING ASSOCIATES,PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (203)747-6181 Fax (203)747-8822

GEOLOGIC BORING LOG

Project: South Klondike Monitoring Well Install. **LEA Comm No:** 68TR672 **Client:** Pratt & Whitney **Location:** East Hartford, Connecticut	**Start Date** 8/26/96 **End Date** 8/26/96	**Boring ID** **SK-MW-23**

Drilling Contractor: Environ. Drilling Inc. **Logged By:** J. Klapheke
Drilling Method: Hollow stem auger **Drilling Foreman:** Dwayne
Sampling Method: Split spoon **Drill Rig:** D120
Groundwater Observations: **Surface Elevation:**
Depth: 4.5 **At:** 0 **Hours** ▽ **Northing:**
Depth: **At:** **Hours** ▼ **Easting:**

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesive	PID/FID (ppm)
0	1017651	92	5,15,15,16	10": Topsoil; 12": Reddish brown, fine SAND, dry to slightly moist, loose to slightly dense	1.6
	1017652	83	17,20,29,27	Reddish brown, fine SAND, with Silt, moist to wet, slightly dense	10.4
4 ▽	1017653	100	7,10,13,15	As above, wet, slightly dense	9.5
	1017654	100	8,11,11,12	Reddish brown, fine to coarse SAND, with Silt, wet, loose	5.4
8	1017655	100	2,3,6,5	As above	3.1
	1017656	42	3,2,2,7	Reddish brown, fine to coarse(+) SAND and SILT, wet, loose, trace(-) fine Gravel	2.4
12	1017657	100	5,7,6,7	As above	0.8
	1017658	100		12": Olive grey, CLAY, trace Silt, trace fine Sand, dense, wet	
16				Bottom of boring at 16'	
20					

Comments:

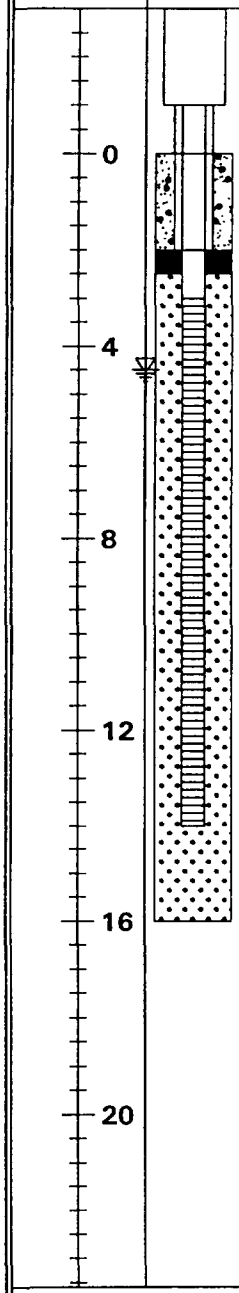
Boring No: SK-MW-23

LEA
LOUREIRO ENGINEERING ASSOCIATES, PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

MONITORING WELL COMPLETION LOG

Project: South Klondike Monitoring Well Install. **LEA Comm No:** 68TR672 **Client:** Pratt & Whitney **Location:** East Hartford, Connecticut	**Start Date:** 8/26/96 **End Date** 8/26/96	**Boring ID** **SK-MW-23**

Drilling Contractor: Environ. Drilling Inc. **Logged By:** J. Klapheke
Drilling Method: Hollow stem auger **Drilling Foreman:** Dwayne
Sampling Method: Split spoon **Drill Rig:** D120
Groundwater Observations: **Surface Elevation:**
Depth: 4.5 **At:** 0 **Hours** ▽ **Northing:**
Depth: **At:** **Hours** ▽ **Easting:**



Elev./ Depth (Ft).	Sample Description (Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesiveness)
	10": Topsoil; 12": Reddish brown, fine SAND, dry to slightly moist, loose to slightly dense
	Reddish brown, fine SAND, with Silt, moist to wet, slightly dense
	As above, wet, slightly dense
	Reddish brown, fine to coarse SAND, with Silt, wet, loose
	As above
	Reddish brown, fine to coarse(+) SAND and SILT, wet, loose, trace(-) fine Gravel
	As above
	12": Olive grey, CLAY, trace Silt, trace fine Sand, dense, wet
	Bottom of boring at 16'

COVER
TYPE: Stick Up

BACKFILL
Type: N/A
Top Depth:
Bottom Depth:

CASING
Diameter: 2"
Length: 6'
Stick Up: 3.0'

SEAL
Type: Bentonite Chips
Quantity: .5 chips
Top Depth: 2'
Bottom Depth: 2.5'

SCREEN
Type: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
Top Depth: 3'
Bottom Depth: 13'

FILTER PACK
Type: #0 Sand
Top Depth: 2.5'
Bottom Depth: 14'

Comments:

Boring No: SK-MW-23

LEA
LOUREIRO ENGINEERING ASSOCIATES,PC
100 Northwest Drive, Plainville, Connecticut, 06062, Phone (203)747-6181 Fax (203)747-8822

GEOLOGIC BORING LOG

Project: South Klondike Monitoring Well Install. **LEA Comm No:** 68TR672 **Client:** Pratt & Whitney **Location:** East Hartford, Connecticut	**Start Date** 8/26/96 **End Date** 8/26/96	**Boring ID** **SK-MW-24**

Drilling Contractor: Environ. Drilling Inc. **Logged By:** J. Klapheke
Drilling Method: Hollow stem auger **Drilling Foreman:** Dwayne
Sampling Method: Split spoon **Drill Rig:** D120
Groundwater Observations: **Surface Elevation:**
Depth: **At:** **Hours** ▽ **Northing:**
Depth: **At:** **Hours** ▼ **Easting:**

Elevation/ Depth	Sample Information: Sample No.	Recovery (%)	Blows /6"	Sample Description: Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesive	PID/FID (ppm)
0	1017659	33	4,5,6,8	6": Topsoil; 2": Dark brown, fine SAND and SILT, dry, loose	
	1017660	83	3,4,4,5	Light greyish brown, fine(+) to coarse SAND, with Silt, moist, loose	4.5
4	1017661	58	4,4,2,5	As above, moist to wet	14.3
	1017662	75	5,10,12,14	As above, wet	13.0
8	1017663	79	3,3,4,6	2": As above; 17": Light grey brown, fine(+) to coarse SAND, with Silt, trace(-) fine Gravel, wet, slightly dense	12.3
	1017664	100	5,7,7,9	As above	21.1
12	1017665	100	9,9,12,15	As above, dark reddish brown	10.2
	1017666	100	11,7,8,14	10": As above; 10": Dark reddish brown, fine to coarse(+) SAND, with fine Gravel, trace Silt, wet, loose; 2": Olive grey CLAY, trace Silt, trace fine Sand, wet, dense	43.2
16				Bottom of boring at 16'	
20					

Comments:

Boring No: SK-MW-24

LEA
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100 Northwest Drive, Plainville, Connecticut, 06062, Phone(203)747-6181 FAX (203)747-8822

MONITORING WELL COMPLETION LOG

Project: South Klondike Monitoring Well Install. **LEA Comm No:** 68TR672 **Client:** Pratt & Whitney **Location:** East Hartford, Connecticut	**Start Date:** 8/26/96 **End Date** 8/26/96	**Boring ID** **SK-MW-24**

Drilling Contractor: Environ. Drilling Inc. **Logged By:** J. Klapheke
Drilling Method: Hollow stem auger **Drilling Foreman:** Dwayne
Sampling Method: Split spoon **Drill Rig:** D120
Groundwater Observations: **Surface Elevation:**
Depth: **At:** **Hours** ▽ **Northing:**
Depth: **At:** **Hours** ▼ **Easting:**

Elev./ Depth (Ft).	Well Construction Diagram	Sample Description Color, Prim. Grain Size, Sec. Grain Sizes, Moist, Sort, Spher, Angul, Sed Struct, Density, Cohesiveness
0		6": Topsoil; 2": Dark brown, fine SAND and SILT, dry, loose
		Light greyish brown, fine(+) to coarse SAND, with Silt, moist, loose
4		As above, moist to wet
		As above, wet
8		2": As above; 17": Light grey brown, fine(+) to coarse SAND, with Silt, trace(-) fine Gravel, wet, slightly dense
		As above
12		As above, dark reddish brown
		10": As above; 10": Dark reddish brown, fine to coarse(+) SAND, with fine Gravel, trace Silt, wet, loose; 2": Olive grey CLAY, trace Silt, trace fine Sand, wet, dense
16		Bottom of boring at 16'
20		

COVER
TYPE: Stick-up

BACKFILL
Type: N/A
Top Depth:
Bottom Depth:

CASING
Diameter: 2"
Length: 6'
Stick Up: 3'

SEAL
Type: Bentonite Chips
Quantity: .5 bags
Top Depth: 2.0'
Bottom Depth: 2.5'

SCREEN
Type: Schedule 40 PVC
Diameter: 2"
Slot Size: 0.010"
Top Depth: 3'
Bottom Depth: 13'

FILTER PACK
Type: #0 Sand
Top Depth: 2.5'
Bottom Depth: 14'

Comments:

Boring No: SK-MW-24

LEA
LOUREIRO ENGINEERING ASSOCIATES,PC
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TECHNICAL MEMORANDA

SUMMARY
SITE INVESTIGATION AND REMEDIATION REPORT
AIRPORT/KLONDIKE AREA
AT
PRATT & WHITNEY
EAST HARTFORD, CONNECTICUT
EPA ID No. CTD990672081

Prepared for:

PRATT & WHITNEY
400 Main Street
East Hartford, Connecticut 06108

Prepared by:

LOUREIRO ENGINEERING ASSOCIATES
100 Northwest Drive
Plainville, Connecticut 06062

LEA Comm. No. 68V8124

DRAFT

TECHNICAL MEMORANDUM 2
WATER-LEVEL MEASUREMENTS AND SITE-SURVEY DATA

SUMMARY
SITE INVESTIGATION AND REMEDIATION REPORT
AIRPORT/KLONDIKE AREA
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Table of Contents

	Page
1. INTRODUCTION	**1-1**
1.1 Purpose and Objective	1-1
1.2 Background	1-1
1.3 Scope	1-2
2. METHODOLOGY	**2-1**
2.1 Manual Measurement of Water Levels	2-1
2.2 Surveying	2-1
2.3 Equipment Decontamination	2-1
2.4 Waste Management	2-2
2.5 Health and Safety	2-2
3. RESULTS	**3-1**
3.1 Water-Level Measurement	3-1
3.2 Survey Data for Elevations of Groundwater Monitoring Wells	3-1
3.3 Horizontal Groundwater Flow	3-1
3.4 Horizontal Groundwater Hydraulic Gradients	3-2
3.5 Vertical Groundwater Hydraulic Gradients	3-2
3.6 Surface Water/Groundwater Interaction	3-3

TABLES

Table 1	Monitoring Well and Piezometer Construction Data Summary
Table 2	Water-Level Elevations, March 28, 1990
Table 3	Water-Level Elevations, November 20, 1991
Table 4	Water-Level Elevations, September 21, 1996
Table 5	Water-Level Elevations, June 2, 1997
Table 6	Water-Level Elevations, November 17, 1997
Table 7	Water-Level Elevations, April 22, 1998

DRAWINGS

Drawing 1	Water Table Contour Map, September 1996
Drawing 2	Water Table Contour Map, June 1997
Drawing 3	Water Table Contour Map, November 1997
Drawing 4	Water Table Contour Map, April 1998

Acronyms

DEP	State of Connecticut Department of Environmental Protection
DPH	State of Connecticut Department of Public Health
H&A	Haley & Aldrich, Inc.
LEA	Loureiro Engineering Associates, P.C.
M&E	Metcalf & Eddy, Inc.
QA/QC	Quality Assurance/Quality Control
PPE	Personal Protective Equipment
SOP	Standard Operating Procedure
TM	Technical Memoranda
TOC	Top Of Casing
TOR	Top Of Riser

1. INTRODUCTION

1.1 Purpose and Objective

This Technical Memoranda (TM) presents the methodology and results of water-level measurements from groundwater monitoring wells and piezometers in the Airport/Klondike Area of the Pratt & Whitney (P&W) facility located at 400 Main Street (Main Street facility) in the Town of East Hartford, Connecticut. Water-levels were measured and an instrument survey was performed as part of the investigation activities completed for the Airport/Klondike Area.

The water-level measurements were used to provide information on the direction of groundwater flow across the Site and to evaluate seasonal variations in the water-table or piezometric surface elevation and flow direction. The instrument survey was performed to obtain the horizontal locations and vertical reference elevations of the sampling locations utilized in the site-wide groundwater investigation. These data are presented on a site-wide basis because of the nature of groundwater movement and the distribution of monitoring wells across the site.

1.2 Background

The Airport/Klondike Area is located on the eastern portion of the P&W Main Street facility on the east side of the main plant, north of Brewer Street and south of Silver Lane. The Airport/Klondike Area consists of four study areas that include the North and South Airport Areas and the North and South Klondike Areas. Previous investigations at the Site performed from 1990 through 1993 resulted in the installation and sampling of groundwater monitoring wells and temporary wellpoints throughout the Airport/Klondike Area. For a more detailed account of the monitoring wells refer to *Technical Memorandum 1, Monitoring Installation and Development and Soil Sampling*.

In the North Airport Area, wells NA-MW-01 through NA-MW-04 were installed in October 1991 during the Site-wide Environmental Monitoring Program at the Main Street facility by Haley & Aldrich, Inc. (H&A). In the North Airport Area, piezometers NA-PZ-01 through NA-PZ-12 were installed in November 1991 during the Site-wide Environmental Monitoring Program.

In the North Klondike Area, wells NK-MW-01 through NK-MW-05 were installed in February 1990 during the Preliminary Reconnaissance Survey of the Airport/Klondike Area by Westinghouse Environmental and Geotechnical Services, Inc. (Westinghouse). Wells NK-MW-06 and NK-MW-07 were installed in October 1991 during the Site-wide Environmental Monitoring Program. Wells NK-MW-08 through NK-MW-10 were installed in October 1992

during the Environmental Assessment of the Former PCB Storage Building by H&A. Wells NK-MW-12 through NK-MW-17 were installed in about April 1993 during the Klondike Area Site Investigation by Metcalf & Eddy, Inc. (M&E). Two additional monitoring wells, NK-MW-18 and NK-MW-19, were installed in July 1996 by Loureiro Engineering Associates, P.C. (LEA) as part of the most recent investigation activities.

In the South Klondike Area, wells SK-MW-01 through SK-MW-08S and SK-MW-8D were installed in February 1990 during the Preliminary Reconnaissance Survey. Wells SK-MW-09 through SK-MW-13 were installed in October 1991 during the Site-wide Environmental Monitoring Program. Wells SK-MW-14I, SK-MW-15I, and SK-MW-16 were installed in about April 1993 during the Klondike Area Site Investigation. Six additional monitoring wells, SK-MW-18 through SK-MW-24, were installed in August 1996 as part of the most recent investigation activities.

In the South Airport Area, monitoring wells SA-MW-01 and SA-MW-02I were installed in February 1990 during the Preliminary Reconnaissance Survey. Wells SA-MW-03 through SA-MW-05S and SA-MW-05I were installed in October 1991 during the Site-wide Environmental Monitoring Program. In the South Airport Area, piezometers SA-PZ-01 and SA-PZ-02 were installed in November 1991 during the Site-wide Environmental Monitoring Program.

1.3 Scope

This TM presents the water-level measurements conducted from March 1990 through April 1998 in the Airport/Klondike Area of the Main Street facility. The results of the water-level measurements completed in March 1990, September 1996, June 1997, November 1997, and April 1998 are presented in this TM. These water-level measurements were typically performed as part of site-wide groundwater sampling events. For a more detailed account of these groundwater sampling events refer to *Technical Memorandum 3, Groundwater Sampling and Quality.*

These data include historical water-level measurements which do not include all of the current monitoring wells. In some cases, the water-level measurements do not even include all monitoring wells available at that time. In addition, this TM does not address the isolated water-level measurements conducted during other site activities such as well development, well sampling, or aquifer testing. The water-level measurements covered are included to provide a site-wide view of groundwater movement.

The horizontal and vertical coordinates of sampling locations were determined by performing an instrument survey of monitoring wells and soil borings. All of the monitoring wells and some of

the soil boring locations were surveyed. In cases where soil boring locations were not surveyed, the horizontal locations were established by measuring from a known reference point (i.e., building corner or existing soil boring) with a tape measure.

2. METHODOLOGY

This section presents the methods and techniques used for water-level measurements from groundwater monitoring wells and piezometers and for the instrument survey.

2.1 Manual Measurement of Water Levels

Measurement of water levels on a site-wide basis must be performed rapidly to minimize the errors resulting from time-dependent effects, such as recharge from precipitation. The task of measuring water levels was typically performed by LEA personnel in a single day.

For the most recent data, manual water-level measurements were made by LEA personnel in general accordance with the techniques described in the LEA Standard Operating Procedure (SOP) *Liquid Sample Collection and Field Analysis*. Depth to water was measured to the nearest 0.01 foot using an electronic water-level indicator. The depth to water measurements were made relative to the surveyed reference mark for each water-level measurement point (i.e., monitoring well, piezometer, etc.).

Historical water level measurements are also presented in this TM. These data are presented "as-is". Quality assurance and quality control information are not available for the historical water-level measurement data. Also, information on equipment decontamination and waste management practices is typically not presented with historical data reports. The discussions of equipment decontamination and waste management practices presented below are not intended to include reference to historical practices.

2.2 Surveying

Ground surface, top-of-casing (TOC), and top-of-riser (TOR) reference elevations and locations for all water-level measurement points were surveyed to a vertical accuracy of 0.01 feet. Water-level elevations were calculated by subtracting the depth to water from the surveyed reference elevation. The ground surface, TOC, and TOR reference elevations, along with the depth to the top and bottom of the screened interval, for each monitoring well and piezometer are presented in Table 1.

2.3 Equipment Decontamination

Before initiating water-level measurements and between locations, the electronic water-level indicator was decontaminated using a dilute methanol/water solution rinse followed by a rinse

with deionized water. Each rinsing solution was applied by wiping the measuring tape with a saturated, disposable paper towel. The entire decontamination process was performed continuously as the tape was withdrawn from the monitoring well by passing the tape through the towel saturated with the methanol/water solution and then through the towel saturated with deionized water.

2.4 Waste Management

The task of measuring water levels generated small quantities of waste, generally consisting of used surgical gloves and the paper towels used to wipe the water-level indicator. Theses wastes were bagged with other personal protective equipment (PPE) in accordance with LEA SOPs.

2.5 Health and Safety

LEA field personnel conducted the field activities in accordance with the LEA Site Health and Safety Plan that was prepared for all of the investigation activities conducted on the Site. In general, wells were sampled in modified Level D PPE consisting of safety glasses and surgical or nitrile gloves.

3. RESULTS

3.1 Water-Level Measurement

The results of the water-level measurements completed in March 1990, November 1991, September 1996, June 1997, November 1997, and April 1998 are presented in Tables 2 through 7. The location identifiers presented in Tables 2 and 3 includes some that have been modified from those originally used to conform to the location identification protocol currently used at the site.

3.2 Survey Data for Elevations of Groundwater Monitoring Wells

The survey data consisting of easting and northings for monitoring wells, piezometers, and stream gauging locations is listed in Table 1. The data shown in Table 1 includes horizontal location data relative to the Connecticut State Plane Coordinate System.

3.3 Horizontal Groundwater Flow

The horizontal groundwater flow directions within the upper portion of the aquifer in the Airport/Klondike Area for four events, September 1996, June 1997, November 1997, and April 1998, have been inferred from the water-table elevation measurements presented in Table 4 through 7. These data have been used to construct water-table contour maps and are presented as Drawings 1 through 4. These four events were selected for mapping since they included the most comprehensive listing of water-level measurement points.

These data indicate that groundwater flow in the upper aquifer is typically toward the southwest, generally toward the Connecticut River. Local groundwater flow directions are generally consistent with the expected regional groundwater flow direction, but are locally influenced to varying degrees by the presence of Pewterpot Brook and the drainage system beneath Rentschler Airport. As discussed in Section 3.6, Pewterpot Brook appears to be generally a gaining stream, receiving groundwater from the upper aquifer over the reach of the stream where piezometers have been installed.

In the November 1997 water-table contour map, the water-table surface appears to be influenced by relatively high groundwater elevations in the North Airport Area near monitoring well NA-MW-03. This area has historically had an elevated water level and the data from this monitoring well is not typically used in constructing water-table contour maps because the water level is typically above the screened interval of the well.

Aside from the somewhat anomalous water-table contour elevations for November 1997, the groundwater elevation contours for the Airport/Klondike Area appear to be temporally uniform. Seasonal variations are typically manifested only in the absolute water-table elevations, however, the relative elevations remain relatively consistent.

There is insufficient data to review groundwater flow directions in the lower portion of the upper aquifer or in the glaciolacustrine deposits. A more detailed discussion on the site-specific geologic and hydrogeologic conditions encountered and of regional geologic and hydrogeologic conditions as derived from available published information is included in the body of this report.

3.4 Horizontal Groundwater Hydraulic Gradients

The horizontal groundwater gradient is a measure of the driving force behind horizontal groundwater flow. The horizontal hydraulic gradient is the slope, in head loss per unit distance, of the groundwater surface as measured in wells tapping the same aquifer and screened in roughly the same interval. Calculations from the available data indicate that the horizontal hydraulic gradient does not temporally vary significantly in absolute or relative (to the different areas) magnitude.

Based on the available water-level elevation data, horizontal hydraulic groundwater gradients in the eastern Klondike Area range from approximately 0.0064 feet/foot to 0.0075 feet/foot. In the Airport Area, horizontal hydraulic groundwater gradients range from approximately 0.0023 feet/foot to 0.0034 feet/foot.

3.5 Vertical Groundwater Hydraulic Gradients

Vertical groundwater hydraulic gradients measure the driving force behind vertical groundwater flow within an aquifer or between aquifers. Vertical hydraulic gradients in the Airport/ Klondike Area have been calculated from groundwater elevation measurements in monitoring well clusters tapping different portions of the upper aquifer. Monitoring well clusters SK-MW-08S/D, in the South Klondike Area and SA-MW-05S/D in the South Airport Area may be used to estimate vertical hydraulic gradients in the upper aquifer.

Vertical hydraulic gradients calculated from water-level measurements made in 1997 indicate that there is a general downward hydraulic gradient to the groundwater in the upper aquifer in the South Airport and South Klondike Areas. Although no data exist for the North Airport and North Klondike Areas, it is reasonable to assume that the same general downward vertical hydraulic gradients exist as observed in the South Airport and South Klondike Areas.

Vertical hydraulic gradients calculated from the March 1990 data indicate a vertical hydraulic gradient of approximately 0.011 feet/foot downward at monitoring wells SK-MW-08S/D. Vertical hydraulic gradients calculated from the November 1991 data indicate a vertical hydraulic gradient of approximately 0.038 feet/foot downward at monitoring wells SK-MW-08S/D. Vertical hydraulic gradients calculated from the June 1997 data indicate a vertical hydraulic gradient of approximately 0.015 feet/foot downward at monitoring wells SK-MW-08S/D and 0.041 feet/foot downward at monitoring wells SA-MW-05S/I. Vertical hydraulic gradients calculated from the November 1997 data indicate a vertical hydraulic gradient of approximately 0.018 feet/foot downward at monitoring wells SK-MW-08S/D and 0.039 feet/foot downward at monitoring wells SA-MW-05S/I.

3.6 Surface Water/Groundwater Interaction

Surface water groundwater interactions can be estimated by measuring the difference in water levels between the upper aquifer and the surface water body. Three surface water piezometers (SK-PZ-01, SK-PZ-02, and SK-PZ-03) have been installed in Pewterpot Brook in the South Klondike Area. These piezometers begin in the area just west of the Virgin Product Storage Area and continue south to approximately the southeast corner of the airport. These three piezometers allow simultaneous measurement of the stage of Pewterpot Brook and the water table elevation at the same location, and therefore, an estimation of the surface water/groundwater interaction in that area.

Measurements of the stage of the brook and water-table elevation have been made during the water level gauging events of 1997. Data for the June 1997 and November 1997 events is presented in Tables 5 and 6. These data have been used to calculate the apparent direction of groundwater flow between the brook and the upper aquifer.

During both the June 1997 and November 1997 events, the water-level measurements indicate that Pewterpot Brook is a gaining stream in the reach between the Virgin Product Storage Area and SK-PZ-02. That is, the elevation of the water table is higher than the stage of the stream and groundwater would tend to flow from the aquifer into the stream. During the June 1997 event, the data collected from piezometer SK-PZ-03 indicated that the stream was a losing stream in that portion of the stream, but was a gaining stream during the November 1997 gauging event.

TABLES

Table 1
Monitoring Well Construction Data Summary
Airport and Klondike Areas, Pratt & Whitney, East hartford, Connecticut

Location Identifier	Easting	Northing	Reference Elevation (Feet)	Top of Casing Elevation (Feet)	Depth to Top of Screen (Feet)	Depth to Bottom of Screen (Feet)
NA-MW-01	183865.1	150087.8	46.09	46.31	5.30	15.30
NA-MW-02	183169.3	147923.8	43.13	43.35	4.80	14.80
NA-MW-03	184182.5	144746.6	43.06	43.30	4.50	14.50
NA-MW-04	182454.9	146144.6	42.49	42.78	10.30	20.30
NA-MW-05	184855.6	148308.3	47.91		2.25	11.25
NA-MW-06	184617.2	149208.1	47.48		2.00	11.00
NA-MW-07	184335.3	147216.0	48.34		2.25	11.25
NA-MW-19	183073.4	147881.3	42.96			
NA-PZ-01	183755.1	147369.5	42.72	44.11	5.00	10.00
NA-PZ-02	183755.1	147369.5	43.80	44.11	5.00	10.00
NA-PZ-03	182515.6	147279.1	43.19	43.49	5.00	10.00
NA-PZ-04	182888.3	146907.3	41.45	41.66	5.00	10.00
NA-PZ-05	183159.3	146629.3	41.32	41.59	5.00	10.00
NA-PZ-06	183622.3	146232.5	40.80	41.02	5.00	10.00
NA-PZ-07	183979.3	145976.8	43.67	43.94	5.00	10.00
NA-PZ-08	182032.9	146148.7	40.74	40.89	5.00	10.00
NA-PZ-09	182771.4	145889.8	40.48	40.76	5.00	10.00
NA-PZ-10	183206.1	145538.2	43.35	43.63	5.00	10.00
NA-PZ-11	183627.1	145197.7	42.19	42.48	5.00	10.00
NA-PZ-12	184148.7	144778.3	43.13			
NK-MW-01	186195.2	148084.0	55.43	55.76	7.00	12.00
NK-MW-02	185325.7	147796.5	48.40	49.64	5.00	10.00
NK-MW-03	185362.9	148327.7	50.94	51.44	7.00	12.00
NK-MW-04	185331.2	148048.2	46.11	46.69	7.00	12.00
NK-MW-05	184855.6	148308.3	46.65	47.70	4.00	9.00
NK-MW-06	184617.2	149208.1	50.57	50.76	4.00	11.50
NK-MW-07	184335.3	147216.0	47.60	47.78	5.00	12.50
NK-MW-08	184896.6	148429.1	50.96		4.00	11.00
NK-MW-09	184894.5	148385.6	50.43	50.60	4.00	11.00
NK-MW-10	184847.3	148392.2	49.78	49.90	3.50	10.50
NK-MW-11	184550.0	148365.0	46.75	46.75		
NK-MW-12	184223.3	147716.3	46.75		4.50	9.50

Table 1
Monitoring Well Construction Data Summary
Airport and Klondike Areas, Pratt & Whitney, East hartford, Connecticut

Location Identifier	Easting	Northing	Reference Elevation (Feet)	Top of Casing Elevation (Feet)	Depth to Top of Screen (Feet)	Depth to Bottom of Screen (Feet)
NK-MW-13	184459.3	147714.0	50.59		5.00	15.00
NK-MW-14S	184887.7	147770.8	49.32		5.00	10.00
NK-MW-15S	186014.8	147387.9	57.49		2.00	12.00
NK-MW-16	185369.3	148354.0	51.44		3.50	13.50
NK-MW-17	184560.7	148863.6	49.57		4.00	9.00
NK-MW-18	185358.2	148289.4	47.31		1.70	10.70
NK-MW-19	184560.9	148244.5	46.38		1.70	10.70
NK-PZ-01	185328.8	148368.0	46.85			
NK-PZ-02	185339.5	148319.6	46.77			
SA-MW-01	182912.2	144567.5	42.12	42.99	13.00	18.00
SA-MW-02I	181788.5	143840.1	37.04	37.78	15.00	25.00
SA-MW-03	182546.9	144407.3	40.36	40.48	10.00	20.00
SA-MW-04	181919.9	143583.9	38.13	38.31	7.50	17.50
SA-MW-05I	182358.5	143938.4	37.81	38.65	13.50	23.50
SA-MW-05S	182359.7	143932.9	38.07	38.48	4.50	14.50
SA-PZ-01	181881.2	145633.8	39.56	39.76	5.00	10.00
SA-PZ-02	182103.7	145507.9	40.00	40.27	5.00	10.00
SK-MW-01	185636.9	144814.9	50.45	51.22	8.00	13.00
SK-MW-02	185424.2	145840.4	50.18	51.30	9.00	19.00
SK-MW-03	185356.5	145553.5	49.70	49.91	6.00	16.00
SK-MW-04	185636.9	145226.6	50.50	50.81	5.60	15.60
SK-MW-05	184770.0	145767.4	47.19	47.80	6.00	11.00
SK-MW-06	184740.7	146811.2	48.43	48.80	7.00	12.00
SK-MW-07	185172.4	147005.9	51.06	52.19	8.00	13.00
SK-MW-08D	184537.2	145559.5	45.02	45.21	49.00	59.00
SK-MW-08S	184542.3	145560.0	42.92	43.43	7.50	12.50
SK-MW-09	186692.4	146766.8	63.67	64.24	5.00	15.00
SK-MW-10	186235.9	145509.2	55.24	55.52	5.00	15.00
SK-MW-11	185100.2	146080.8	49.58	49.77	5.00	15.00
SK-MW-12	184584.6	146773.0	45.92	46.34	4.50	14.50
SK-MW-13	184869.3	144540.8	42.85	43.15	2.60	12.60
SK-MW-14I	184985.2	145793.7	46.85		10.00	15.00

Table 1
Monitoring Well Construction Data Summary
Airport and Klondike Areas, Pratt & Whitney, East hartford, Connecticut

Location Identifier	Easting	Northing	Reference Elevation (Feet)	Top of Casing Elevation (Feet)	Depth to Top of Screen (Feet)	Depth to Bottom of Screen (Feet)
SK-MW-15I	185236.6	146418.8	49.35		10.00	15.00
SK-MW-16	184352.9	146630.4	45.28		4.50	9.50
SK-MW-19	184607.1	146126.0	48.99		3.50	13.50
SK-MW-20	184672.7	145738.3	50.05		4.00	14.00
SK-MW-21	184710.1	145509.0	47.86		3.50	13.50
SK-MW-22	184748.8	145265.4	47.44		3.00	13.00
SK-MW-23	184573.4	145344.2	46.39		3.00	13.00
SK-MW-24	184824.5	146376.8	49.15		3.00	13.00

Notes: All depth measurements are given in feet below ground surface, except as noted.
All elevations are given in feet above mean sea level.
Top of casing elevation indicates the elevation of the cover of the protective casing.
Top of riser elevation indicates the elevation of the measurement reference point on well riser.

Table 2
Water-Level Elevations, March 28, 1990
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Location Identifier	Screened Interval (ft)	Reference Elevation (ft)	Depth to Groundwater (ft)	Elevation of Groundwater (ft)	Depth to Surface Water (ft)	Elevation of Surface Water (ft)
NK-MW-01	7-12	55.43	5.35	**50.08**		
NK-MW-02I	5-10	49.64	5.04	**44.60**		
NK-MW-03	7-12	50.94	5.87	**45.07**		
NK-MW-04	7-12	46.11	1.53	**44.58**		
NK-MW-05	5-10	47.67	7.23	**40.44**		
SA-MW-01	13-18	42.12	9.99	**32.13**		
SK-MW-01	8-13	51.22	8.26	**42.96**		
SK-MW-02I	9-19	51.30	4.39	**46.91**		
SK-MW-03I	6-16	49.70	3.57	**46.13**		
SK-MW-04I	5.6-15.6	50.81	4.10	**46.71**		
SK-MW-05	6-11	47.80	7.75	**40.05**		
SK-MW-06	7-12	48.43	6.41	**42.02**		
SK-MW-07I	8-13	52.19	8.67	**43.52**		
SK-MW-08D	49-59	45.02	9.42	**35.60**		
SK-MW-08S	7.5-12.5	42.92	5.67	**37.25**		

Notes: Shaded regions indicate values that were used to create groundwater contours.
NR means Not Recorded.

Table 3
Water-Level Elevations, November 20, 1991
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Location Identifier	Screened Interval (ft)	Reference Elevation (ft)	Depth to Groundwater (ft)	Elevation of Groundwater (ft)	Depth to Surface Water (ft)	Elevation of Surface Water (ft)
ET-PZ-01	5-10[a]	42.30				
NA-MW-01	5.3-15.3	46.09	4.80	41.29		
NA-MW-02	4.8-14.8	43.13	3.70	39.43		
NA-MW-03	4.5-14.5	43.06	4.60	38.46		
NA-MW-04	10.3-20.3	42.49	5.95	36.54		
NA-MW-05	2.3-11.3	47.91				
NA-MW-06	2-11	47.48				
NA-MW-07	2.3-11.3	48.34				
NA-PZ-01	5-10[a]	42.72				
NA-PZ-02	5-10	43.80				
NA-PZ-03	5-10	43.19				
NA-PZ-04	5-10	41.45				
NA-PZ-05	5-10	41.32				
NA-PZ-06	5-10	40.80				
NA-PZ-07	5-10	43.67				
NA-PZ-08	5-10	40.74				
NA-PZ-09	5-10	40.48				
NA-PZ-10	5-10	43.35				
NA-PZ-11	5-10	42.19				
NA-PZ-12	5-10[a]	43.13				
NK-MW-01	7-12	55.43	5.94	49.49		
NK-MW-02	5-10	48.40	3.88	44.52		
NK-MW-03	7-12	50.94	5.88	45.06		
NK-MW-04	7-12	46.11	1.60	44.51		
NK-MW-05	5-10	46.65	6.44	40.21		
NK-MW-06	4-11	50.58	6.38	44.20		
NK-MW-07	5-12.5	47.60	10.24	37.36		
NK-MW-08	4-11	51.01				
NK-MW-09	4-11	50.76				
NK-MW-10	3.5-10.5	49.80				
NK-MW-11		46.75				
NK-MW-12	4.5-9.5	46.41				
NK-MW-13	5-15	50.49				
NK-MW-14	5-10	49.09				
NK-MW-15	2-12	57.35				
NK-MW-16	3.5-13.5	51.25				
NK-MW-17	4-9	49.57				
NK-MW-18	1.7-10.7	47.31				
NK-MW-19	1.7-10.7	46.38				
NK-PZ-01	NA	46.85				
NK-PZ-02	NA	46.77				
NK-SG-01	NA	38.33				
NK-SG-02	NA	38.97				
NK-SG-03	NA	41.45				
NK-SG-04[b]	NA	46.54				
SA-MW-01	13-18	42.12	9.75	32.37		
SA-MW-02I	15-25	37.04	12.45	24.59		
SA-MW-03	10-20	40.36	12.57	27.79		
SA-MW-04	7.5-18.5	38.13	11.16	26.97		
SA-MW-05I	13.5-23.5	37.81	9.32	28.49		
SA-MW-05S	4.5-18.5	38.07	9.29	28.78		
SA-PZ-01	5-10	39.56				

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Table 3
Water-Level Elevations, November 20, 1991
Airport/klondike Area, Pratt & Whitney, East Hartford, Connecticut

Location Identifier	Screened Interval (ft)	Reference Elevation (ft)	Depth to Groundwater (ft)	Elevation of Groundwater (ft)	Depth to Surface Water (ft)	Elevation of Surface Water (ft)
SA-PZ-02	5-10	40.00				
SK-MW-01	8-13	50.45	9.51	40.94		
SK-MW-02	9-19	50.18	6.76	43.42		
SK-MW-03	6-16	49.70	6.93	42.77		
SK-MW-04	5.6-15.6	50.50	6.71	43.79		
SK-MW-05	6-11	47.19	8.30	38.89		
SK-MW-06	7-12	48.43	7.25	41.18		
SK-MW-07	8-13	51.06	8.17	42.89		
SK-MW-08D	49-59	45.02	8.32	36.70		
SK-MW-08S	7.5-12.5	42.92	5.73	37.19		
SK-MW-09	5-15	63.67	9.00	54.67		
SK-MW-10	5-15	55.24	9.83	45.41		
SK-MW-11	5-15	49.58	7.88	41.70		
SK-MW-12	4.5-14.5	45.92	5.90	40.02		
SK-MW-13	2.6-12.6	42.85	6.10	36.75		
SK-MW-14I	10-15	46.85				
SK-MW-15I	10-15	49.35				
SK-MW-16	4.5-9.5	45.28				
SK-MW-19	3.5-13.5	48.99				
SK-MW-20	4-14	50.05				
SK-MW-21	3.5-13.5	47.86				
SK-MW-22	3-13	47.44				
SK-MW-23	3-13	46.39				
SK-MW-24	3-13	49.15				
SK-SG-01	NA	40.59				
SK-SG-02	NA	41.03				
SK-SG-03	NA	40.84				
SK-SG-04	NA	41.01				
SK-SG-05	NA	41.04				
SK-SG-06	NA	39.88				
SK-SG-07	NA	40.83				
SK-SG-08	NA	41.15				
SK-SG-09	NA	42.61				

Notes:

Shaded regions indicate values that were used to create groundwater contours.

[a] denotes assumed screened interval.

NR means Not Recorded.

DNF means did not find.

NA means Not Applicable.

[b] denotes same location as NK-PZ-02.

Table 4
Water-Level Elevations, September , 1996
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Location Identifier	Screened Interval (ft)	Reference Elevation (ft)	Depth to Groundwater (ft)	Elevation of Groundwater (ft)	Depth to Surface Water (ft)	Elevation of Surface Water (ft)
ET-PZ-01	5-10[a]	42.30				
NA-MW-01	5.3-15.3	46.09				
NA-MW-02	4.8-14.8	43.13				
NA-MW-03	4.5-14.5	43.06				
NA-MW-04	10.3-20.3	42.49				
NA-MW-05	2.3-11.3	47.91				
NA-MW-06	2-11	47.48				
NA-MW-07	2.3-11.3	48.34				
NA-PZ-01	5-10[a]	42.72				
NA-PZ-02	5-10	43.80				
NA-PZ-03	5-10	43.19				
NA-PZ-04	5-10	41.45				
NA-PZ-05	5-10	41.32				
NA-PZ-06	5-10	40.80				
NA-PZ-07	5-10	43.67				
NA-PZ-08	5-10	40.74				
NA-PZ-09	5-10	40.48				
NA-PZ-10	5-10	43.35				
NA-PZ-11	5-10	42.19				
NA-PZ-12	5-10[a]	43.13				
NK-MW-01	7-12	55.43	8.09	47.34		
NK-MW-02	5-10	48.40	4.33	44.07		
NK-MW-03	7-12	50.94	6.39	44.55		
NK-MW-04	7-12	46.11	2.28	43.83		
NK-MW-06	4-11.5	50.58	7.74	42.84		
NK-MW-07	5-12.5	47.60	10.10	37.50		
NK-MW-08	4-11	51.01	8.86	42.15		
NK-MW-09	4-11	50.76	8.21	42.55		
NK-MW-10	3.5-10.5	49.80	8.12	41.68		
NK-MW-11		46.75	7.21	39.54		
NK-MW-12	4.5-9.5	46.41	8.65	37.76		
NK-MW-13	5-15	50.49	12.10	38.39		
NK-MW-14	5-10	49.09	8.61	40.48		
NK-MW-15	2-12	57.35	6.27	51.08		
NK-MW-16	3.5-13.5	51.25	6.57	44.68		
NK-MW-17	4-9	49.57				
NK-MW-18	1.7-10.7	47.31	4.02	43.29		
NK-MW-19	1.7-10.7	46.38	6.56	39.82		
NK-PZ-01	NA	46.85				
NK-PZ-02	NA	46.77				
NK-SG-01	NA	38.33				
NK-SG-02	NA	38.97				
NK-SG-03	NA	41.45				
NK-SG-04	NA	46.54				
SA-MW-01	13-18	42.12	9.52	32.60		
SA-MW-02I	15-25	37.04				
SA-MW-03	10-20	40.36	10.06	30.30		
SA-MW-04	7.5-17.5	38.13	11.04	27.09		
SA-MW-05I	13.5-23.5	37.81				
SA-MW-05S	4.5-14.5	38.07	9.17	28.90		
SA-PZ-01	5-10	39.56				
SA-PZ-02	5-10	40.00				

Table 4

Water-Level Elevations, September , 1996

Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Location Identifier	Screened Interval (ft)	Reference Elevation (ft)	Depth to Groundwater (ft)	Elevation of Groundwater (ft)	Depth to Surface Water (ft)	Elevation of Surface Water (ft)
SK-MW-01	8-13	50.45	10.12	40.33		
SK-MW-02	9-19	50.18	7.87	42.31		
SK-MW-03	6-16	49.70	8.25	41.45		
SK-MW-04	5.6-15.6	50.50	7.90	42.60		
SK-MW-05	6-11	47.19	8.58	38.61		
SK-MW-06	7-12	48.43	8.29	40.14		
SK-MW-07	8-13	51.06	9.42	41.64		
SK-MW-08D	49-59	45.02				
SK-MW-08S	7.5-12.5	42.92	6.02	36.90		
SK-MW-09	5-15	63.67	9.58	54.09		
SK-MW-10	5-15	55.24	10.38	44.86		
SK-MW-11	5-15	49.58	8.78	40.80		
SK-MW-12	4.5-14.5	45.92	6.62	39.30		
SK-MW-13	2.6-12.6	42.85	6.36	36.49		
SK-MW-14I	10-15	46.85				
SK-MW-15I	10-15	49.35				
SK-MW-16	4.5-9.5	45.28	7.15	38.13		
SK-MW-19	3.5-13.5	48.99	10.19	38.80		
SK-MW-20	4-14	50.05	12.02	38.03		
SK-MW-21	3.5-13.5	47.86	10.75	37.11		
SK-MW-22	3-13	47.44	10.42	37.02		
SK-MW-23	3-13	46.39	9.69	36.70		
SK-MW-24	3-13	49.15	9.12	40.03		
SK-PZ-01	NA	40.59				
SK-PZ-02	NA	41.03				
SK-PZ-03	NA	40.84				
SK-SG-04	NA	41.01				
SK-SG-05	NA	41.04				
SK-SG-06	NA	39.88				
SK-SG-07	NA	40.83				
SK-SG-08	NA	41.15				
SK-SG-09	NA	42.61				

Notes:

Shaded regions indicate values that were used to create groundwater contours.

[a] denotes assumed screened interval.

NR means Not Recorded.

DNF means did not find.

NA means Not Applicable.

[b] denotes same location as NK-PZ-02.

Table 5
Water-Level Elevations, June 2, 1997
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Location Identifier	Screened Interval (ft)	Reference Elevation (ft)	Depth to Groundwater (ft)	Elevation of Groundwater (ft)	Depth to Surface Water (ft)	Elevation of Surface Water (ft)
ET-PZ-01	5-10[a]	42.30	2.82	39.48		
NA-MW-01	5.3-15.3	46.09	4.80	41.29		
NA-MW-02	4.8-14.8	43.13	3.75	39.38		
NA-MW-03	4.5-14.5	43.06	4.23	38.83		
NA-MW-04	10.3-20.3	42.49	5.30	37.19		
NA-MW-05	2.3-11.3	47.91	7.77	40.14		
NA-MW-06	2-11	47.48	7.44	40.04		
NA-MW-07	2.3-11.3	48.34	8.32	40.02		
NA-PZ-01	5-10[a]	42.72	NR			
NA-PZ-02	5-10	43.80	5.79	38.01		
NA-PZ-03	5-10	43.19	4.39	38.80		
NA-PZ-04	5-10	41.45	3.40	38.05		
NA-PZ-05	5-10	41.32	NR			
NA-PZ-06	5-10	40.80	NR			
NA-PZ-07	5-10	43.67	4.89	38.78		
NA-PZ-08	5-10	40.74	5.49	35.25		
NA-PZ-09	5-10	40.48	NR			
NA-PZ-10	5-10	43.35	NR			
NA-PZ-11	5-10	42.19	NR			
NA-PZ-12	5-10[a]	43.13	NR			
NK-MW-01	7-12	55.43	8.50	46.93		
NK-MW-02	5-10	48.40	3.92	44.48		
NK-MW-03	7-12	50.94	5.77	45.17		
NK-MW-04	7-12	46.11	1.71	44.40		
NK-MW-06	4-11.5	50.58	6.63	43.95		
NK-MW-07	5-12.5	47.60	9.32	38.28		
NK-MW-08	4-11	51.01	8.63	42.38		
NK-MW-09	4-11	50.76	8.51	42.25		
NK-MW-10	3.5-10.5	49.80	7.90	41.90		
NK-MW-11		46.75	6.19	40.56		
NK-MW-12	4.5-9.5	46.41	8.02	38.39		
NK-MW-13	5-15	50.49	11.44	39.05		
NK-MW-14	5-10	49.09	8.51	40.58		
NK-MW-15	2-12	57.35	4.38	52.97		
NK-MW-16	3.5-13.5	51.25	5.95	45.30		
NK-MW-17	4-9	49.57	7.05	42.52		
NK-MW-18	1.7-10.7	47.31	2.45	44.86		
NK-MW-19	1.7-10.7	46.38	5.99	40.39		
NK-PZ-01	NA	46.85	NR			
NK-PZ-02	NA	46.77	NR			
NK-SG-01	NA	38.33	NA		0.18	**38.15**
NK-SG-02	NA	38.97	NA		0.57	**38.40**
NK-SG-03	NA	41.45	NA		1.25	**40.20**
NK-SG-04	NA	46.54	NA		1.85	**44.69**
SA-MW-01	13-18	42.12	8.28	33.84		
SA-MW-02I	15-25	37.04	10.75	26.29		
SA-MW-03	10-20	40.36	8.75	31.61		
SA-MW-04	7.5-17.5	38.13	10.41	27.72		
SA-MW-05I	13.5-23.5	37.81	8.52	29.29		
SA-MW-05S	4.5-14.5	38.07	8.45	29.62		
SA-PZ-01	5-10	39.56	5.59	33.97		

Table 5
Water-Level Elevations, June 2, 1997
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Location Identifier	Screened Interval (ft)	Reference Elevation (ft)	Depth to Groundwater (ft)	Elevation of Groundwater (ft)	Depth to Surface Water (ft)	Elevation of Surface Water (ft)
SA-PZ-02	5-10	40.00				
SK-MW-01	8-13	50.45	7.90	42.55		
SK-MW-02	9-19	50.18	3.70	46.48		
SK-MW-03	6-16	49.70	4.05	45.65		
SK-MW-04	5.6-15.6	50.50	4.85	45.65		
SK-MW-05	6-11	47.19	7.10	40.09		
SK-MW-06	7-12	48.43	6.65	41.78		
SK-MW-07	8-13	51.06	7.58	43.48		
SK-MW-08D	49-59	45.02	8.37	36.65		
SK-MW-08S	7.5-12.5	42.92	5.60	37.32		
SK-MW-09	5-15	63.67	6.56	57.11		
SK-MW-10	5-15	55.24	9.07	46.17		
SK-MW-11	5-15	49.58	5.74	43.84		
SK-MW-12	4.5-14.5	45.92	5.35	40.57		
SK-MW-13	2.6-12.6	42.85	5.60	37.25		
SK-MW-14I	10-15	46.85	4.90	41.95		
SK-MW-15I	10-15	49.35	4.72	44.63		
SK-MW-16	4.5-9.5	45.28	6.80	38.48		
SK-MW-19	3.5-13.5	48.99	9.05	39.94		
SK-MW-20	4-14	50.05	11.02	39.03		
SK-MW-21	3.5-13.5	47.86	9.60	38.26		
SK-MW-22	3-13	47.44	9.37	38.07		
SK-MW-23	3-13	46.39	9.20	37.19		
SK-MW-24	3-13	49.15	7.25	41.90		
SK-PZ-01	NA	40.59	3.41	37.18	3.66	**36.93**
SK-PZ-02	NA	41.03	4.28	36.75	4.51	**36.52**
SK-PZ-03	NA	40.84	4.01	36.83	4.48	**36.36**
SK-SG-04	NA	41.01			4.93	**36.08**
SK-SG-05	NA	41.04			4.06	**36.98**
SK-SG-06	NA	39.88			1.37	**38.51**
SK-SG-07	NA	40.83			2.48	**38.35**
SK-SG-08	NA	41.15			2.81	**38.34**
SK-SG-09	NA	42.61			4.32	**38.29**

Notes:

Shaded regions indicate values that were used to create groundwater contours.

[a] denotes assumed screened interval.

NR means Not Recorded.

DNF means did not find.

NA means Not Applicable.

[b] denotes same location as NK-PZ-02.

Table 6
Water-Level Elevations, November 17, 1997
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Location Identifier	Screened Interval (ft)	Reference Elevation (ft)	Depth to Groundwater (ft)	Elevation of Groundwater (ft)	Depth to Surface Water (ft)	Elevation of Surface Water (ft)
ET-PZ-01	5-10[a]	42.30	2.62	**39.68**		
NA-MW-01	5.3-15.3	46.09	4.93	**41.16**		
NA-MW-02	4.8-14.8	43.13	3.37	**39.76**		
NA-MW-03	4.5-14.5	43.06	4.62	**38.44**		
NA-MW-04	10.3-20.3	42.49	6.05	**36.44**		
NA-MW-05	2.3-11.3	47.91	8.05	**39.86**		
NA-MW-06	2-11	47.48	7.65	**39.83**		
NA-MW-07	2.3-11.3	48.34	8.40	**39.94**		
NA-PZ-01	5-10[a]	42.72	3.01	**39.71**		
NA-PZ-02	5-10	43.80	5.58	**38.22**		
NA-PZ-03	5-10	43.19	4.89	**38.30**		
NA-PZ-04	5-10	41.45	3.28	**38.17**		
NA-PZ-05	5-10	41.32	DNF			
NA-PZ-06	5-10	40.80	4.75	**36.05**		
NA-PZ-07	5-10	43.67	5.36	**38.31**		
NA-PZ-08	5-10	40.74	5.75	**34.99**		
NA-PZ-09	5-10	40.48	5.70	**34.78**		
NA-PZ-10	5-10	43.35	4.72	**38.63**		
NA-PZ-11	5-10	42.19	3.88	**38.31**		
NA-PZ-12	5-10[a]	43.13	4.80	**38.33**		
NK-MW-01	7-12	55.43	6.34	**49.09**		
NK-MW-02	5-10	48.40	4.02	**44.38**		
NK-MW-03	7-12	50.94	5.73	**45.21**		
NK-MW-04	7-12	46.11	1.60	**44.51**		
NK-MW-06	4-11.5	50.58	7.24	**43.34**		
NK-MW-07	5-12.5	47.60	9.97	**37.63**		
NK-MW-08	4-11	51.01	8.53	**42.48**		
NK-MW-09	4-11	50.76	8.40	**42.36**		
NK-MW-10	3.5-10.5	49.80	7.78	**42.02**		
NK-MW-11		46.75	6.92	**39.83**		
NK-MW-12	4.5-9.5	46.41	8.54	**37.87**		
NK-MW-13	5-15	50.49	12.01	**38.48**		
NK-MW-14	5-10	49.09	8.40	**40.69**		
NK-MW-15	2-12	57.35	7.21	**50.14**		
NK-MW-16	3.5-13.5	51.25	5.94	**45.31**		
NK-MW-17	4-9	49.57	7.92	**41.65**		
NK-MW-18	1.7-10.7	47.31	2.45	**44.86**		
NK-MW-19	1.7-10.7	46.38	6.69	**39.69**		
NK-PZ-01	NA	46.85	2.13	44.72	2.10	**44.75**
NK-PZ-02	NA	46.77	2.06	44.71		**44.66**
NK-SG-01	NA	38.33			1.03	**37.30**
NK-SG-02	NA	38.97			1.57	**37.40**
NK-SG-03	NA	41.45			1.26	**40.19**
NK-SG-04[b]	NA	46.54			1.88	**44.66**
SA-MW-01	13-18	42.12	9.16	32.96		
SA-MW-02I	15-25	37.04	10.34	26.70		
SA-MW-03	10-20	40.36	9.09	31.27		
SA-MW-04	7.5-17.5	38.13	10.65	27.48		
SA-MW-05I	13.5-23.5	37.81	8.19	29.62		
SA-MW-05S	4.5-14.5	38.07	8.14	29.93		
SA-PZ-01	5-10	39.56	5.46	34.10		
SA-PZ-02	5-10	40.00	5.71	34.29		

Table 6
Water-Level Elevations, November 17, 1997
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Location Identifier	Screened Interval (ft)	Reference Elevation (ft)	Depth to Groundwater (ft)	Elevation of Groundwater (ft)	Depth to Surface Water (ft)	Elevation of Surface Water (ft)
SK-MW-01	8-13	50.45	10.65	**39.80**		
SK-MW-02	9-19	50.18	8.48	**41.70**		
SK-MW-03	6-16	49.70	8.64	**41.06**		
SK-MW-04	5.6-15.6	50.50	8.19	**42.31**		
SK-MW-05	6-11	47.19	8.41	**38.78**		
SK-MW-06	7-12	48.43	8.09	**40.34**		
SK-MW-07	8-13	51.06	9.02	**42.04**		
SK-MW-08D	49-59	45.02	8.29	**36.73**		
SK-MW-08S	7.5-12.5	42.92	5.41	**37.51**		
SK-MW-09	5-15	63.67	10.37	**53.30**		
SK-MW-10	5-15	55.24	10.27	**44.97**		
SK-MW-11	5-15	49.58	8.50	**41.08**		
SK-MW-12	4.5-14.5	45.92	6.29	**39.63**		
SK-MW-13	2.6-12.6	42.85	5.88	**36.97**		
SK-MW-14I	10-15	46.85	7.03	**39.82**		
SK-MW-15I	10-15	49.35	7.54	**41.81**		
SK-MW-16	4.5-9.5	45.28	6.78	**38.50**		
SK-MW-19	3.5-13.5	48.99	9.88	**39.11**		
SK-MW-20	4-14	50.05	11.88	**38.17**		
SK-MW-21	3.5-13.5	47.86	10.79	**37.07**		
SK-MW-22	3-13	47.44	10.16	**37.28**		
SK-MW-23	3-13	46.39	9.20	**37.19**		
SK-MW-24	3-13	49.15	8.78	**40.37**		
SK-SG-01	NA	40.59	3.49	**37.10**	3.68	**36.91**
SK-SG-02	NA	41.03	4.25	**36.78**	4.48	**36.55**
SK-SG-03	NA	40.84	4.25	**36.59**	4.44	**36.40**
SK-SG-04	NA	41.01			4.88	**36.13**
SK-SG-05	NA	41.04			4.11	**36.93**
SK-SG-06	NA	39.88			1.48	**38.40**
SK-SG-07	NA	40.83			2.76	**38.07**
SK-SG-08	NA	41.15			3.35	**37.80**
SK-SG-09	NA	42.61			5.35	**37.26**

Notes:

Shaded regions indicate values that were used to create groundwater contours.

[a] denotes assumed screened interval.

NR means Not Recorded.

DNF means did not find.

NA means Not Applicable.

[b] denotes same location as NK-PZ-02.

Table 7
Water-Level Elevations, April 22, 1998
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Location Identifier	Screened Interval (ft)	Reference Elevation (ft)	Depth to Groundwater (ft)	Elevation of Groundwater (ft)	Depth to Surface Water (ft)	Elevation of Surface Water (ft)
ET-PZ-01	5-10[a]	42.30	1.90	40.40		
NA-MW-01	5.3-15.3	46.09	5.24	40.85		
NA-MW-02	4.8-14.8	43.13	3.20	39.93		
NA-MW-03	4.5-14.5	43.06	3.45	39.61		
NA-MW-04	10.3-20.3	42.49	4.83	37.66		
NA-MW-05	2.3-11.3	47.91	7.26	40.65		
NA-MW-06	2-11	47.48	6.90	40.58		
NA-MW-07	2.3-11.3	48.34	7.63	40.71		
NA-PZ-01	5-10[a]	42.72	2.77	39.95		
NA-PZ-02	5-10	43.80	5.53	38.27		
NA-PZ-03	5-10	43.19	3.67	39.52		
NA-PZ-04	5-10	41.45	2.93	38.52		
NA-PZ-05	5-10	41.32	2.71	38.61		
NA-PZ-06	5-10	40.80	4.39	36.41		
NA-PZ-07	5-10	43.67	4.00	39.67		
NA-PZ-08	5-10	40.74	4.90	35.84		
NA-PZ-09	5-10	40.48	4.73	35.75		
NA-PZ-10	5-10	43.35	4.75	38.60		
NA-PZ-11	5-10	42.19	3.17	39.02		
NA-PZ-12	5-10[a]	43.13	3.47	39.66		
NK-MW-01	7-12	55.43	3.37	52.06		
NK-MW-02	5-10	48.40	3.64	44.76		
NK-MW-03	7-12	50.94	5.61	45.33		
NK-MW-04	7-12	46.11	1.25	44.86		
NK-MW-06	4-11.5	50.58	6.20	44.38		
NK-MW-07	5-12.5	47.60	9.65	37.95		
NK-MW-08	4-11	51.01	8.54	42.47		
NK-MW-09	4-11	50.76	8.37	42.39		
NK-MW-10	3.5-10.5	49.80	7.73	42.07		
NK-MW-11		46.75	5.97	40.78		
NK-MW-12	4.5-9.5	46.41	8.14	38.27		
NK-MW-13	5-15	50.49	11.44	39.05		
NK-MW-14	5-10	49.09	8.42	40.67		
NK-MW-15	2-12	57.35	5.27	52.08		
NK-MW-16	3.5-13.5	51.25	8.82	42.43		
NK-MW-17	4-9	49.57	6.56	43.01		
NK-MW-18	1.7-10.7	47.31	2.15	45.16		
NK-MW-19	1.7-10.7	46.38	5.85	40.53		
NK-PZ-01	NA	46.85	1.95	44.90		
NK-PZ-02	NA	46.77	2.03	44.74		
NK-SG-01	NA	38.33			0.60	**37.73**
NK-SG-02	NA	38.97			1.12	**37.85**
NK-SG-03	NA	41.45			1.26	**40.19**
NK-SG-04[b]	NA	46.54				
SA-MW-01	13-18	42.12	7.94	34.18		
SA-MW-02I	15-25	37.04	10.33	26.71		
SA-MW-03	10-20	40.36	8.97	31.39		
SA-MW-04	7.5-17.5	38.13	9.95	28.18		
SA-MW-05I	13.5-23.5	37.81	7.61	30.20		
SA-MW-05S	4.5-14.5	38.07	7.26	30.81		
SA-PZ-01	5-10	39.56	4.88	34.68		
SA-PZ-02	5-10	40.00	4.98	35.02		

Table 7
Water-Level Elevations, April 22, 1998
Airport/Klondike Area, Pratt & Whitney, East Hartford, Connecticut

Location Identifier	Screened Interval (ft)	Reference Elevation (ft)	Depth to Groundwater (ft)	Elevation of Groundwater (ft)	Depth to Surface Water (ft)	Elevation of Surface Water (ft)
SK-MW-01	8-13	50.45	6.95	**43.50**		
SK-MW-02	9-19	50.18	2.55	**47.63**		
SK-MW-03	6-16	49.70	2.70	**47.00**		
SK-MW-04	5.6-15.6	50.50	3.25	**47.25**		
SK-MW-05	6-11	47.19	6.08	**41.11**		
SK-MW-06	7-12	48.43	5.89	**42.54**		
SK-MW-07	8-13	51.06	7.12	**43.94**		
SK-MW-08D	49-59	45.02	8.09	**36.93**		
SK-MW-08S	7.5-12.5	42.92	4.77	**38.15**		
SK-MW-09	5-15	63.67	5.60	**58.07**		
SK-MW-10	5-15	55.24	8.53	**46.71**		
SK-MW-11	5-15	49.58	4.28	**45.30**		
SK-MW-12	4.5-14.5	45.92	4.89	**41.03**		
SK-MW-13	2.6-12.6	42.85	4.41	**38.44**		
SK-MW-14I	10-15	46.85	NA			
SK-MW-15I	10-15	49.35	3.67	**45.68**		
SK-MW-16	4.5-9.5	45.28	6.55	**38.73**		
SK-MW-19	3.5-13.5	48.99	8.18	**40.81**		
SK-MW-20	4-14	50.05	10.15	**39.90**		
SK-MW-21	3.5-13.5	47.86	8.49	**39.37**		
SK-MW-22	3-13	47.44	8.12	**39.32**		
SK-MW-23	3-13	46.39	7.97	**38.42**		
SK-MW-24	3-13	49.15	6.31	**42.84**		
SK-SG-01	NA	40.59	3.00	**37.59**		
SK-SG-02	NA	41.03	3.38	**37.65**		
SK-SG-03	NA	40.84	2.90	**37.94**		
SK-SG-04	NA	41.01			4.32	**36.69**
SK-SG-05	NA	41.04			3.63	**37.41**
SK-SG-06	NA	39.88			1.56	**38.32**
SK-SG-07	NA	40.83			2.60	**38.23**
SK-SG-08	NA	41.15			3.35	**37.80**
SK-SG-09	NA	42.61			4.86	**37.75**

Notes:

Shaded regions indicate values that were used to create groundwater contours.

[a] denotes assumed screened interval.

NR means Not Recorded.

DNF means did not find.

NA means Not Applicable.

[b] denotes same location as NK-PZ-02.

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